

# SEQUENCE LISTING

<110> Council of Scientific and Industrial Research

<120> A COMPUTATIONAL METHOD FOR THE IDENTIFICATION OF CANDIDATE PROTEINS  
USEFUL AS ANTI-INFECTIVES

<130> Q63915

<160> 118

<170> PatentIn version 3.0

<210> 1

<211> 51

<212> PRT

<213> C. jejuni

<220>

<221> misc\_feature

<223> highly acidic protein

<220>

<221> misc\_feature

<223> gi|6967728

<400> 1

Met	Ala	Tyr	Glu	Asp	Glu	Glu	Asp	Leu	Asn	Tyr	Asp	Asp	Tyr	Glu	Asn
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Glu	Asp	Glu	Glu	Tyr	Pro	Gln	Asn	His	His	Lys	Asn	Tyr	Asn	Tyr	Asp
		20						25					30		

Asp	Asp	Asp	Tyr	Glu	Tyr	Asp	Asp	Asp	Asn	Asn	Asp	Asp	Asp	Phe	Tyr
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Glu	Met	Asp
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<210> 2

<211> 32

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<213> C. jejuni

<220>

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<223> small hydrophobic protein

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<223> gi|6969129

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Met Thr Met Leu Asp Ile Phe Glu Ile Ile Phe Ile Thr Thr Val Val  
1 5 10 15

Ile Ile Gly Phe Gly Gly Ile Val Phe Val Val Thr Lys Glu Lys Lys  
20 25 30

<210> 3

<211> 57

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<213> C. jejuni

<220>

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<223> putative coiled coil protein

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<223> gi|6968493

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Met Ser Phe Glu Glu Asn Leu Lys His Ala Asn Glu Ser Leu Glu Lys  
1 5 10 15

Leu Asn Asn Gln Glu Leu Ala Leu Asp Glu Ser Val Lys Ile Tyr Lys  
20 25 30

Glu Gly Leu Glu Ser Ile Lys Lys Ala Arg Leu Glu Leu Glu Lys Ala  
35 40 45

Lys Leu Glu Val Glu Gln Ile Asp Glu  
50 55

<210> 4

<211> 542

<212> PRT

<213> C. jejuni

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<223> gi|6968611

<400> 4

Met Lys Ile Leu Leu Leu Asn Glu Asn Pro Val Val Ser Arg Leu Val

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1	5	10	15												
Ser	Leu	Ser	Ala	Lys	Lys	Met	Ser	Tyr	Asp	Phe	Glu	Glu	Leu	Asn	Ala
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Tyr	Ser	Glu	Asn	Leu	Gly	Asn	Tyr	Asp	Val	Ile	Val	Val	Asp	Ser	Asp
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Thr	Pro	Ala	Pro	Leu	Lys	Ile	Leu	Lys	Glu	Lys	Cys	Asp	Arg	Leu	Ile
	50					55					60				
Phe	Leu	Ala	Pro	Arg	Asn	Gln	Asn	Val	Glu	Asp	Ile	Asp	Ala	Gln	Ile
65					70					75					80
Leu	Gln	Lys	Pro	Phe	Leu	Pro	Thr	Asp	Phe	Leu	Asn	Leu	Leu	Asn	Asn
				85					90					95	
Lys	Asp	Ala	Asn	Lys	His	Thr	Ser	Ile	Asp	Leu	Pro	Met	Leu	Ser	Asn
			100					105					110		
Asp	Glu	Asn	Pro	Tyr	Ala	Asp	Ile	Ser	Leu	Asp	Leu	Asp	Asn	Leu	Asn
			115				120					125			
Leu	Asp	Asp	Leu	Pro	Asp	Glu	Asn	Ser	Leu	Asp	Ile	Asn	Ser	Glu	Gly
	130					135					140				
Met	Glu	Asp	Leu	Ser	Phe	Asp	Asp	Asp	Ala	Gln	Asp	Asp	Asn	Ala	Asn
145					150					155					160
Lys	Thr	Leu	Glu	Thr	Gln	Asn	Leu	Glu	His	Glu	Thr	Ile	Lys	Glu	Gln
				165					170					175	
Thr	Gln	Glu	Asp	Thr	Gln	Ile	Asp	Leu	Asp	Leu	Thr	Leu	Glu	Asp	Gly
			180					185					190		
Glu	Ser	Glu	Lys	Glu	Asp	Leu	Ser	Gln	Glu	His	Thr	Ala	Leu	Asp	Thr
		195					200					205			
Glu	Pro	Ser	Leu	Asp	Glu	Leu	Asp	Asp	Lys	Asn	Asp	Glu	Asp	Leu	Glu
	210					215					220				
Ile	Lys	Glu	Asp	Asp	Lys	Asn	Glu	Glu	Ile	Glu	Lys	Gln	Glu	Leu	Leu
225					230					235					240
Asp	Asp	Ser	Lys	Thr	Asn	Thr	Leu	Glu	Met	Gln	Glu	Glu	Leu	Ser	Glu
				245					250					255	
Ser	Gln	Asp	Asp	Asn	Ser	Asn	Lys	Thr	Leu	Glu	Thr	Gln	Asn	Leu	Glu
		260						265					270		
His	Asp	Asn	Leu	Glu	Gln	Glu	Thr	Ile	Lys	Glu	Gln	Thr	Gln	Glu	Asp
	275						280					285			
Thr	Gln	Ile	Asp	Leu	Asp	Leu	Thr	Leu	Glu	Asp	Gly	Glu	Ser	Glu	Lys
	290					295					300				

Glu Asp Leu Ser Gln Glu His Thr Ala Leu Asp Thr Glu Pro Ser Leu  
 305 310 315 320  
 Asp Glu Leu Asp Asp Lys Asn Asp Glu Asp Leu Glu Asp Asn Lys Glu  
 325 330 335  
 Leu Gln Ala Asn Ile Ser Asp Phe Asp Asp Leu Pro Glu Val Glu Glu  
 340 345 350  
 Gln Glu Lys Glu Met Asp Phe Asp Asp Leu Pro Glu Asp Ala Glu Phe  
 355 360 365  
 Leu Gly Gln Ala Lys Tyr Asn Glu Glu Ser Glu Glu Asn Leu Glu Glu  
 370 375 380  
 Phe Ala Pro Val Val Glu Glu Asp Ile Gln Asp Glu Ile Asp Asp Phe  
 385 390 395 400  
 Ala Ser Asn Leu Ser Thr Gln Asp Gln Ile Lys Glu Glu Leu Ala Gln  
 405 410 415  
 Leu Asp Glu Leu Asp Tyr Gly Ile Asp Ser Asp Asn Ser Ser Lys Val  
 420 425 430  
 Leu Glu Asp Phe Lys Asp Glu Pro Ile Leu Asp Asp Lys Glu Leu Gly  
 435 440 445  
 Thr Asn Glu Glu Glu Val Val Val Pro Asn Leu Asn Ile Ser Asp Phe  
 450 455 460  
 Asp Thr Leu Lys Glu Ser Asp Ile Gln Glu Ala Leu Gly Glu Glu Ile  
 465 470 475 480  
 Leu Glu Lys Asn Glu Glu Pro Ile Val Ser Asp Val Thr Lys Asp Asp  
 485 490 495  
 Asn Ser Glu Glu Ile Val Asn Glu Leu Ser Gln Ser Ile Ala Gly Ala  
 500 505 510  
 Ile Thr Ser Ser Ile Lys Asp Asp Thr Leu Lys Ala Ala Leu Lys Gly  
 515 520 525  
 Met Asn Met Asn Ile Asn Ile Asn Ile Ser Phe Lys Glu Asp  
 530 535 540

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 <213> C. pneumoniaeCWL029

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 <223> histone like protein 2

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 <223> gi|4376663

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Met Ile Gly Ala Gln Lys Lys Gln Ser Gly Lys Lys Thr Ala Ser Arg  
 1 5 10 15  
 Ala Val Arg Lys Pro Ala Lys Lys Val Ala Ala Lys Arg Thr Val Lys  
 20 25 30  
 Lys Ala Thr Val Arg Lys Thr Ala Val Lys Lys Pro Ala Val Arg Lys  
 35 40 45  
 Thr Ala Ala Lys Lys Thr Val Ala Lys Lys Thr Thr Ala Lys Arg Thr  
 50 55 60  
 Val Arg Lys Thr Val Ala Lys Lys Pro Ala Val Lys Lys Val Ala Ala  
 65 70 75 80  
 Lys Arg Val Val Lys Lys Thr Val Ala Lys Lys Thr Thr Ala Lys Arg  
 85 90 95  
 Ala Val Arg Lys Thr Val Ala Lys Lys Pro Val Ala Arg Lys Thr Thr  
 100 105 110  
 Val Ala Lys Gly Ser Pro Lys Lys Ala Ala Ala Cys Ala Leu Ala Cys  
 115 120 125  
 His Lys Asn His Lys His Thr Ser Ser Cys Lys Arg Val Cys Ser Ser  
 130 135 140  
 Thr Ala Thr Arg Lys His Gly Ser Lys Ser Arg Val Arg Thr Ala His  
 145 150 155 160  
 Gly Trp Arg His Gln Leu Ile Lys Met Met Ser Arg  
 165 170

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 <223> hypothetical protein-possible frameshift with CT593

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 <223> gi|3522902

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Met Phe Thr Leu Phe Leu Cys Glu His Leu Leu Thr Asn Ile Leu Ala  
1 5 10 15  
Ser Ser Phe Leu Ala Lys Ser Gln Gly Phe Ile Thr Leu Val Asn Leu  
20 25 30  
Phe His Lys Ile Pro Gly Leu Lys Val Ile Glu Ile Thr Cys Leu Ala  
35 40 45  
Leu Pro Leu Gly Ile His Ser Ile Ile Gly Phe Ser Tyr Leu Leu  
50 55 60

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<213> C. trachomatis

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Met Asn Met Leu Gly Val Gln Lys Lys Cys Ser Thr Arg Lys Thr Ala  
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Ala Arg Lys Thr Val Val Arg Lys Pro Ala Ala Lys Lys Thr Ala Ala  
20 25 30  
Lys Lys Ala Pro Val Arg Lys Val Ala Ala Lys Lys Thr Val Ala Arg  
35 40 45  
Lys Thr Val Ala Lys Lys Thr Val Ala Ala Arg Lys Pro Val Ala Lys  
50 55 60  
Lys Ala Thr Ala Lys Lys Ala Pro Val Arg Lys Val Ala Ala Lys Lys  
65 70 75 80  
Thr Val Ala Arg Lys Thr Val Ala Lys Lys Thr Val Ala Ala Arg Lys  
85 90 95  
Pro Val Ala Lys Lys Ala Thr Ala Lys Lys Ala Pro Val Arg Lys Ala  
100 105 110  
Val Ala Lys Lys Thr Val Ala Arg Lys Thr Val Ala Lys Lys Thr Val  
115 120 125

Ala Ala Arg Lys Pro Val Ala Lys Arg Val Ala Ser Thr Lys Lys Ser  
130 135 140

Ser Ile Ala Val Lys Ala Gly Val Cys Met Lys Lys His Lys His Thr  
145 150 155 160

Ala Ala Cys Gly Arg Val Ala Ala Ser Gly Val Lys Val Cys Ala Ser  
165 170 175

Ala Ala Lys Arg Lys Thr Asn Pro Asn Arg Ser Arg Thr Ala His Ser  
180 185 190

Trp Arg Gln Gln Leu Met Lys Leu Val Ala Arg  
195 200

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<223> outer membrane integrity protein (tolA)

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Met Gln Asn Asn Arg Gln Lys Lys Gly Ile Asn Ala Phe Ala Ile Ser  
1 5 10 15

Ile Leu Leu His Phe Ile Leu Phe Gly Leu Leu Ile Leu Ser Ser Leu  
20 25 30

Tyr His Thr Val Glu Ile Met Gly Gly Gly Glu Gly Glu Gly Asp Val  
35 40 45

Ile Gly Ala Val Ile Val Asp Thr Gly Thr Ala Ala Gln Glu Trp Gly  
50 55 60

Arg Ile Gln Gln Gln Lys Lys Gly Gln Ala Asp Lys Gln Lys Arg Pro  
65 70 75 80

Glu Pro Val Val Glu Glu Lys Pro Pro Glu Pro Asn Gln Glu Glu Ile  
85 90 95

Lys His Gln Gln Glu Val Gln Arg Gln Glu Glu Leu Lys Arg Gln Gln  
100 105 110

Glu Gln Gln Arg Gln Gln Glu Ile Lys Lys Gln Gln Glu Gln Ala Arg

115 120 125  
130 135 140  
145 150 155 160  
165 170 175  
180 185 190  
195 200 205  
210 215 220  
225 230 235 240  
245 250 255  
260 265 270  
275 280 285  
290 295 300  
305 310 315 320  
325 330 335  
340 345 350  
355 360 365  
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Gln Glu Ala Leu Glu Lys Gln Lys Gln Ala Glu Glu Ala Lys Ala Lys  
130 135 140  
Gln Ala Ala Glu Ala Ala Lys Leu Lys Ala Asp Ala Glu Ala Lys Arg  
145 150 155 160  
Leu Ala Ala Ala Ala Lys Gln Ala Glu Glu Glu Ala Lys Ala Lys Ala  
165 170 175  
Ala Glu Ile Ala Ala Gln Lys Ala Lys Gln Glu Ala Glu Ala Lys Ala  
180 185 190  
Lys Leu Glu Ala Glu Ala Lys Ala Lys Ala Val Ala Glu Ala Lys Ala  
195 200 205  
Lys Ala Glu Ala Glu Ala Lys Ala Lys Ala Ala Ala Glu Ala Lys Ala  
210 215 220  
Lys Ala Asp Ala Glu Ala Lys Ala Ala Thr Glu Ala Lys Arg Lys Ala  
225 230 235 240  
Asp Gln Ala Ser Leu Asp Asp Phe Leu Asn Gly Gly Asp Ile Gly Gly  
245 250 255  
Gly Ser Ala Ser Lys Gly Gly Asn Thr Asn Lys Gly Gly Thr Gln Gly  
260 265 270  
Ser Gly Ala Ala Leu Gly Ser Gly Asp Gly Gly Lys Val Gly Asp Gln  
275 280 285  
Tyr Ala Gly Val Ile Lys Lys Glu Ile Gln Arg Arg Phe Leu Lys Asp  
290 295 300  
Pro Asn Phe Ala Gly Lys Val Cys Arg Ile Lys Ile Gln Leu Gly Arg  
305 310 315 320  
Asp Gly Thr Ile Leu Gly Tyr Gln Lys Ile Ser Gly Ser Asp Asp Ile  
325 330 335  
Cys Ser Ala Ala Leu Ser Ala Val Ala Arg Thr Lys Lys Val Pro Ala  
340 345 350  
Ala Pro Ser Asp Glu Ile Tyr Glu Lys Tyr Lys Ser Pro Ile Ile Asp  
355 360 365  
Phe Asp Ile Arg  
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Met Phe Ser Leu Phe His His Pro Gln Leu Arg Pro Arg His Tyr Ala
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Gly Gly Val Val Val Ile Ser Phe Ile Ile Leu Phe Tyr Gly Gly Ala
          20          25          30

Leu Ser Ser Ile Phe Ala Leu Gly Gly Glu Leu Gln Trp Arg Ala Trp
          35          40          45

Phe Thr Asp Asp Tyr Leu Gln His Leu Ile Leu Phe Ser Phe Gly Gln
          50          55          60

Ala Leu Leu Ser Thr Val Leu Ser Ile Phe Phe Gly Leu Leu Leu Ala
65          70          75          80

Arg Ala Leu Phe Tyr Lys Pro Phe Leu Gly Lys Lys Trp Leu Leu Lys
          85          90          95

Leu Met Ser Leu Thr Phe Val Leu Pro Ala Leu Val Val Ile Phe Gly
          100          105          110

Leu Ile Gly Ile Tyr Gly Ser Ser Gly Trp Leu Ala Trp Leu Ala Asn
          115          120          125

Leu Phe Gly Met Ser Trp Gln Gly His Ile Tyr Gly Leu Ser Gly Ile
          130          135          140

Leu Ile Ala His Leu Phe Phe Asn Ile Pro Leu Ala Ala Gln Leu Phe
145          150          155          160

Leu Gln Ser Leu Gln Ser Ile Pro Tyr Gln Gln Arg Gln Leu Ala Ala
          165          170          175

Gln Leu Asn Leu Gln Gly Trp Gln Phe Val Lys Leu Val Glu Trp Pro
          180          185          190

Val Phe Arg Gln Gln Cys Leu Pro Thr Phe Ser Leu Ile Phe Met Leu
          195          200          205

Cys Phe Thr Ser Phe Thr Val Val Leu Thr Leu Gly Gly Gly Pro Gln
210          215          220

Tyr Thr Thr Leu Glu Thr Ala Ile Tyr Gln Ala Ile Leu Phe Glu Phe

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225				230				235				240			
Asp	Leu	Pro	Lys	Ala	Ala	Leu	Phe	Ala	Met	Leu	Gln	Phe	Val	Phe	Cys
				245				250				255			
Leu	Ile	Leu	Phe	Ser	Leu	Thr	Ser	Arg	Phe	Ser	Leu	Ser	Asn	Gln	Asn
				260				265				270			
Gly	Leu	Ser	Asn	Ser	Asn	Ile	Trp	Phe	Glu	Lys	Pro	Lys	Ser	Ala	Val
				275				280				285			
Lys	Ile	Phe	His	Ile	Leu	Val	Leu	Leu	Val	Phe	Val	Phe	Phe	Leu	Phe
				290				295				300			
Ser	Pro	Val	Leu	Asn	Ile	Leu	Ile	Ser	Ala	Leu	Ser	Ser	Ser	Asn	Leu
305				310				315				320			
Leu	Thr	Val	Trp	His	Asn	Ser	Gln	Leu	Trp	Arg	Ala	Leu	Gly	Tyr	Ser
				325				330				335			
Leu	Ser	Ile	Ala	Pro	Leu	Ser	Ala	Leu	Leu	Ala	Leu	Thr	Met	Ala	Ile
				340				345				350			
Ala	Leu	Leu	Leu	Leu	Ser	Arg	Arg	Leu	Glu	Trp	Leu	His	Tyr	Gln	Lys
				355				360				365			
Ile	Ser	Gln	Phe	Ile	Ile	Asn	Ala	Gly	Met	Val	Ile	Leu	Ala	Ile	Pro
				370				375				380			
Ile	Leu	Val	Leu	Ala	Met	Gly	Leu	Phe	Leu	Leu	Leu	Gln	Asp	Arg	Asp
385				390				395				400			
Phe	Ser	Asn	Ile	Asp	Leu	Phe	Ile	Ile	Val	Val	Phe	Cys	Asn	Ala	Leu
				405				410				415			
Ser	Ala	Met	Pro	Phe	Val	Leu	Arg	Ile	Leu	Ser	Ala	Pro	Phe	His	Asn
				420				425				430			
Asn	Met	Arg	Tyr	Tyr	Glu	Asn	Leu	Cys	Asn	Ser	Leu	Gly	Ile	Val	Gly
				435				440				445			
Trp	Gln	Arg	Phe	Tyr	Leu	Ile	Glu	Trp	Lys	Thr	Leu	Arg	Ala	Pro	Leu
				450				455				460			
Arg	Tyr	Ala	Phe	Ala	Leu	Gly	Leu	Ala	Leu	Ser	Leu	Gly	Asp	Phe	Thr
465				470				475				480			
Ala	Ile	Ala	Leu	Phe	Gly	Asn	Gln	Glu	Phe	Thr	Ser	Leu	Pro	His	Leu
				485				490				495			
Leu	Tyr	Gln	Gln	Leu	Gly	Asn	Tyr	Arg	Asn	Gln	Asp	Ala	Ala	Val	Thr
				500				505				510			
Ala	Gly	Ile	Leu	Leu	Leu	Leu	Cys	Gly	Ile	Leu	Phe	Ala	Phe	Ile	His
				515				520				525			

Thr Tyr Arg Asp Ala Asp Asp Leu Ser Lys  
530 535

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<220>  
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<223> heme exporter protein B (ccmB)

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<223> gi|1574645

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Met Ile Phe Leu Glu Ile Ile Lys Arg Glu Leu Gln Ile Ala Met Arg  
1 5 10 15  
Lys Asn Ala Glu Ile Leu Asn Pro Leu Trp Phe Phe Leu Leu Val Ile  
20 25 30  
Thr Leu Phe Pro Leu Val Ile Gly Pro Asp Pro Lys Leu Leu Ser Arg  
35 40 45  
Ile Ala Pro Gly Ile Ala Trp Val Ala Ala Leu Leu Ser Ala Leu Leu  
50 55 60  
Ser Phe Glu Arg Leu Phe Arg Asp Asp Phe Ile Asp Gly Ser Leu Glu  
65 70 75 80  
Gln Leu Met Leu Thr Ala Gln Pro Leu Pro Met Thr Ala Leu Ala Lys  
85 90 95  
Val Val Ala His Trp Leu Leu Thr Gly Leu Pro Leu Ile Leu Leu Ser  
100 105 110  
Pro Ile Ala Ala Leu Leu Leu Ser Leu Glu Val Asn Ile Trp Trp Ala  
115 120 125  
Leu Val Leu Thr Leu Leu Leu Gly Thr Pro Val Leu Ser Cys Ile Gly  
130 135 140  
Ala Ile Gly Val Ala Leu Thr Val Gly Leu Arg Lys Gly Gly Val Leu  
145 150 155 160  
Leu Ser Leu Leu Val Val Pro Leu Phe Ile Pro Val Leu Ile Phe Ala  
165 170 175  
Ser Ser Val Leu Glu Ala Ala Gly Leu Asn Val Pro Tyr Gly Gly Gln

180 185 190  
 Leu Ala Ile Leu Gly Ala Met Met Val Gly Ala Val Thr Leu Ser Pro  
 195 200 205

Phe Ala Ile Ala Ala Ala Leu Arg Ile Ser Leu Asp Asn  
 210 215 220

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 <223> recombination protein (rec2)

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Met Lys Leu Asn Leu Ile Thr Leu Val Val Leu Leu Ile Val Ala Asp  
 1 5 10 15

Leu Thr Leu Leu Phe Leu Pro Gln Pro Leu Leu Leu Pro Trp Gln Val  
 20 25 30

Ala Leu Val Ile Ala Leu Val Leu Ile Phe Leu Phe Ile Phe Leu Arg  
 35 40 45

Arg Asn Phe Leu Val Ser Leu Ala Phe Phe Val Ala Ser Leu Gly Tyr  
 50 55 60

Phe His Tyr Ser Ala Leu Ser Leu Ser Gln Gln Ala Gln Asn Ile Thr  
 65 70 75 80

Ala Gln Lys Gln Val Val Thr Phe Lys Ile Gln Glu Ile Leu His Gln  
 85 90 95

Gln Asp Tyr Gln Thr Leu Ile Ala Thr Ala Thr Leu Glu Asn Asn Leu  
 100 105 110

Gln Glu Gln Arg Ile Phe Leu Asn Trp Lys Ala Lys Glu Val Pro Gln  
 115 120 125

Leu Ser Glu Ile Trp Gln Ala Glu Ile Ser Leu Arg Ser Leu Ser Ala  
 130 135 140

Arg Leu Asn Phe Gly Gly Phe Asp Arg Gln Gln Trp Tyr Phe Ser Lys  
 145 150 155 160



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97  
98  
99  
100

450	455	460
Ala Gly Ile Phe Met Leu Ile Ile Trp Asn Ile Tyr Arg Glu Pro Glu 465	470	475 480
Ile Ser Ser Ser Asn Trp Gln Ile Lys Arg Ala Lys Phe Phe Thr Leu 485	490	495
Asn Leu Ser Lys Pro Leu Leu Lys Asn Glu Arg Ile Asn Val Leu Arg 500	505	510
Cys Ser Phe Gly Ile Ile Leu Leu Cys Phe Thr Ile Leu Leu Phe Lys 515	520	525
Gln Leu Ser Lys Pro Thr Trp Gln Val Asp Thr Leu Asp Val Gly Gln 530	535	540
Gly Leu Ala Thr Leu Ile Val Lys Asn Gly Lys Gly Ile Leu Tyr Asp 545	550	555 560
Thr Gly Ser Ser Trp Arg Gly Gly Ser Met Ala Glu Leu Glu Ile Leu 565	570	575
Pro Tyr Leu Gln Arg Glu Gly Ile Val Leu Glu Lys Leu Ile Leu Ser 580	585	590
His Asp Asp Asn Asp His Ala Gly Gly Ala Ser Thr Ile Leu Lys Ala 595	600	605
Tyr Pro Asn Val Glu Leu Ile Thr Pro Ser Arg Lys Asn Tyr Gly Glu 610	615	620
Asn Tyr Arg Thr Phe Cys Thr Ala Gly Arg Asp Trp His Trp Gln Gly 625	630	635 640
Leu His Phe Gln Ile Leu Ser Pro His Asn Val Val Thr Arg Ala Asp 645	650	655
Asn Ser His Ser Cys Val Ile Leu Val Asp Asp Gly Lys Asn Ser Val 660	665	670
Leu Leu Thr Gly Asp Ala Glu Ala Lys Asn Glu Gln Ile Phe Ala Arg 675	680	685
Thr Leu Gly Lys Ile Asp Val Leu Gln Val Gly His His Gly Ser Lys 690	695	700
Thr Ser Thr Ser Glu Tyr Leu Leu Ser Gln Val Arg Pro Asp Val Ala 705	710	715 720
Ile Ile Ser Ser Gly Arg Trp Asn Pro Trp Lys Phe Pro His Tyr Ser 725	730	735
Val Met Glu Arg Leu His Arg Tyr Lys Ser Ala Val Glu Asn Thr Ala 740	745	750

Val Ser Gly Gln Val Arg Val Asn Phe Phe Gln Asp Arg Leu Glu Ile  
755 760 765

Gln Gln Ala Arg Thr Lys Phe Ser Pro Trp Tyr Ala Arg Val Ile Gly  
770 775 780

Leu Ser Lys Glu  
785

<210> 12

<211> 505

<212> PRT

<213> H. pylori

<220>

<221> misc\_feature

<223> poly E-rich protein

<220>

<221> misc\_feature

<223> gi|2313421

<400> 12

Met Lys Met Ile Leu Phe Asn Gln Asn Pro Met Ile Thr Lys Leu Leu  
1 5 10 15

Glu Ser Val Ser Lys Lys Leu Glu Leu Pro Ile Glu Asn Phe Asn His  
20 25 30

Tyr Gln Glu Leu Ser Ala Arg Leu Lys Glu Asn Gln Glu Trp Leu Leu  
35 40 45

Ile Ala Asp Asp Glu Cys Leu Glu Lys Leu Asp Gln Val Asp Trp Leu  
50 55 60

Glu Leu Lys Glu Thr Ile Ser Gln Asn Lys Asn Ser Val Cys Met Tyr  
65 70 75 80

Lys Lys Gly Asn Glu Ala Gln Pro Phe Leu Glu Gly Phe Glu Val Lys  
85 90 95

Ile Lys Lys Pro Phe Leu Pro Thr Glu Met Leu Lys Val Leu Gln Lys  
100 105 110

Lys Leu Gly Ser Asn Ala Ser Glu Leu Glu Pro Ser Gln Asn Leu Asp  
115 120 125

Pro Thr Gln Glu Val Leu Glu Thr Asn Trp Asp Glu Leu Glu Asn Leu  
130 135 140

Gly Asp Leu Glu Ala Leu Val Gln Glu Glu Pro Asn Asn Glu Glu Gln

145 150 155 160  
Leu Leu Pro Thr Leu Asn Asp Gln Glu Glu Lys Glu Glu Val Lys Glu  
165 170 175  
Glu Glu Lys Glu Glu Val Lys Glu Glu Glu Lys Glu Glu Val Lys Glu  
180 185 190  
Glu Glu Lys Glu Glu Val Lys Glu Thr Pro Gln Glu Glu Lys Lys Pro  
195 200 205  
Lys Asp Asp Glu Thr Gln Glu Gly Glu Thr Leu Lys Asp Lys Glu Val  
210 215 220  
Ser Lys Glu Leu Glu Ala Pro Gln Glu Leu Glu Ile Pro Lys Glu Glu  
225 230 235 240  
Thr Gln Glu Gln Asp Pro Ile Lys Glu Glu Thr Gln Glu Asn Lys Glu  
245 250 255  
Glu Lys Gln Glu Lys Thr Gln Asp Ser Pro Ser Ala Gln Glu Leu Glu  
260 265 270  
Ala Met Gln Glu Leu Val Lys Glu Ile Gln Glu Asn Ser Asn Gly Gln  
275 280 285  
Glu Asn Lys Glu Lys Thr Gln Glu Ser Ala Glu Ile Pro Gln Asp Lys  
290 295 300  
Glu Ile Gln Glu Val Val Thr Glu Lys Thr Gln Ala Gln Glu Leu Glu  
305 310 315 320  
Val Pro Lys Glu Lys Thr Gln Glu Ser Ala Glu Ala Leu Gln Glu Thr  
325 330 335  
Gln Ala His Glu Leu Glu Lys Gln Glu Ile Ala Glu Thr Pro Gln Asp  
340 345 350  
Val Glu Ile Pro Gln Ser Gln Asp Lys Glu Val Gln Glu Leu Glu Ile  
355 360 365  
Pro Lys Glu Glu Thr Gln Glu Asn Thr Glu Thr Pro Gln Asp Val Glu  
370 375 380  
Thr Pro Gln Glu Lys Glu Thr Gln Glu Asp His Tyr Glu Ser Ile Glu  
385 390 395 400  
Asp Ile Pro Glu Pro Val Met Ala Lys Ala Met Gly Glu Glu Leu Pro  
405 410 415  
Phe Leu Asn Glu Ala Val Ala Lys Ile Pro Asn Asn Glu Asn Asp Thr  
420 425 430  
Glu Thr Pro Lys Glu Ser Val Thr Glu Thr Ser Lys Asn Glu Asn Asn  
435 440 445



Thr Glu Thr Pro Gln Glu Lys Glu Glu Ser Asp Lys Thr Ser Ser Pro  
450 455 460

Leu Glu Leu Arg Leu Asn Leu Gln Asp Leu Leu Lys Ser Leu Asn Gln  
465 470 475 480

Glu Ser Leu Lys Ser Leu Leu Glu Asn Lys Thr Leu Ser Ile Lys Ile  
485 490 495

Thr Leu Glu Asp Lys Lys Pro Asn Ala  
500 505

<210> 13  
<211> 60  
<212> PRT  
<213> H. pylori

<220>  
<221> misc\_feature  
<223> histidine-rich, metal binding polypeptide (hpn)

<220>  
<221> misc\_feature  
<223> gi|2314604

<400> 13

Met Ala His His Glu Glu Gln His Gly Gly His His His His His His  
1 5 10 15

His Thr His His His His Tyr His Gly Gly Glu His His His His His  
20 25 30

His Ser Ser His His Glu Glu Gly Cys Cys Ser Thr Ser Asp Ser His  
35 40 45

His Gln Glu Glu Gly Cys Cys His Gly His His Glu  
50 55 60

<210> 14  
<211> 72  
<212> PRT  
<213> H. pylori

<220>  
<221> misc\_feature  
<223> histidine and glutamine-rich protein

<220>  
<221> misc\_feature  
<223> gi|2314605

<400> 14

Met Ala His His Glu Gln Gln Gln Gln Gln Gln Ala Asn Ser Gln His  
1 5 10 15  
His His His His His Ala His His His His Tyr Tyr Gly Gly Glu His  
20 25 30  
His His His Asn Ala Gln Gln His Ala Glu Gln Gln Ala Glu Gln Gln  
35 40 45  
Ala Gln Gln Gln Gln Gln Gln Gln Ala His Gln Gln Gln Gln Gln Lys  
50 55 60  
Ala Gln Gln Gln Asn Gln Gln Tyr  
65 70

<210> 15

<211> 1139

<212> PRT

<213> M. genitalium

<220>

<221> misc\_feature

<223> cytodherence-accessory protein

<220>

<221> misc\_feature

<223> gi|1046012

<400> 15

Met Ala Lys Asn Lys Gln Ser Val Phe Glu Glu Lys Asn Tyr Thr Gln  
1 5 10 15  
Thr Glu Pro Glu Asn Ile Phe Gly Asp Leu Tyr Asp Gly Lys Ser Thr  
20 25 30  
Val Glu Glu Asp Pro Asn Ile Lys Val Ala Tyr Asp Ala Asp Gly Asn  
35 40 45  
Gly Tyr Tyr Ile Ala Phe Asn Lys Glu Thr Gly Val Tyr Tyr Asp Pro  
50 55 60  
Tyr Gly Asp Thr Glu Tyr Asp Ile Ser Gln Leu Phe Asp Glu Asn Gly  
65 70 75 80  
Asn Pro Phe Val Phe Asp Glu Lys Gln Glu Glu Asn Asp Tyr Leu Lys  
85 90 95  
Tyr Val Gly Asn Pro Asp Tyr Gly Ser Tyr Asp Glu Asn Gly Glu Trp

	100		105		110	
Val Trp Ser Gly Tyr Phe Glu Asn Asp Gln Trp Ile Ser Thr Lys Glu	115		120		125	
Ser Gln Pro Thr Asp Glu Asn Tyr Gly Phe Asp Ser Asp Leu Pro Pro	130		135		140	
Glu Val Lys Gln Pro Glu Ser Val Glu Asp Asn Tyr Gly Phe Asp Asn	145		150		155	160
Asp Leu Pro Pro Glu Val Lys Gln Pro Glu Ser Val Glu Asp Asn Tyr	165		170		175	
Gly Phe Asp Asn Asp Leu Pro Pro Glu Val Lys Gln Pro Glu Ser Val	180		185		190	
Val Asp Gln Pro Ser Ser Asp Asp Tyr Phe Ala Lys Gln Pro Thr Asp	195		200		205	
Glu Asn Tyr Gly Phe Asp Asn Asp Leu Pro Pro Glu Val Lys Gln Pro	210		215		220	
Glu Ser Val Val Asp Gln Pro Ser Ser Asp Asp His Phe Ala Lys Gln	225		230		235	240
Pro Glu Ser Thr Thr Asp Ser Tyr Ser Phe Asp Ser Asp Leu Pro Gln	245		250		255	
Pro Thr Leu Asp Gln Pro Ser Leu Asp Asp His Val Gln Tyr Asn Phe	260		265		270	
Asp His His Glu Glu Leu Lys Pro Val Ala Glu Glu Gln Asn Asn Tyr	275		280		285	
Gln Val Gly Phe Asp Gln Val Gln Ala Asn Leu Asp Asn Asn Glu Glu	290		295		300	
Ile Gln Pro Thr Ala Glu Lys Lys Val Thr Thr Asp Phe Glu Ser Lys	305		310		315	320
Gln Ala Gln Val Val Asp Ser Tyr Gln Leu Pro Ile Asp Thr Asp Gln	325		330		335	
Gln Asp Gln Thr Thr Phe Ser Ser Ser Phe Glu Thr Gln Pro Thr Val	340		345		350	
Glu Gln Phe Asp Gln Val Asn Ser Glu Val Asn Asp Gln Phe Lys Pro	355		360		365	
Glu Ile Thr Lys Glu Pro Val Leu Glu Ser Ser Phe Asn Lys Gln Asp	370		375		380	
Val Val Glu Thr Ser Asp Leu Asn Ser Glu Ser Asn Leu Tyr Ser Glu	385		390		395	400



1000 900 800 700 600 500 400 300 200 100 0

Val	Val	Glu	Thr	Ser	Asn	Tyr	Thr	Asn	Asn	Leu	Gln	Lys	Phe	Asp	Ile	
690						695					700					
Gln	Ser	Asp	Asn	Lys	Ile	Thr	Ile	Thr	Thr	Lys	Lys	Ser	Ser	Pro	Gln	
705					710					715					720	
Ile	Pro	Thr	Thr	Leu	Pro	Ile	Ser	Phe	Val	Ser	Asn	Arg	Ile	Glu	Tyr	
				725					730					735		
Lys	Pro	Val	Glu	Thr	Leu	Ala	Leu	Asp	Asn	Lys	Glu	Ser	Gln	Gln	Glu	
			740					745					750			
Gln	Ile	Thr	Ile	Asn	Ser	Ile	Thr	Glu	Asp	Ser	Lys	Thr	Leu	Ala	Lys	
		755					760					765				
Thr	Leu	Ser	Val	Gln	Leu	Gln	Gln	Ile	Asn	Ser	Leu	Asn	Asn	Gln	Ser	
770						775					780					
Ile	Val	Thr	Ser	Glu	Ser	Val	Arg	Leu	Asp	Lys	Lys	Asp	Asp	Gln	Leu	
785					790					795					800	
Thr	Ile	Asn	Thr	Val	Asn	Ser	Glu	Asp	Gln	Gln	Pro	Lys	Ile	Glu	Val	
				805					810					815		
Phe	Val	Lys	Ala	Lys	Glu	Pro	Val	Glu	Glu	His	Ser	Ile	Thr	Gln	Asn	
			820					825					830			
Lys	Gln	Ser	Val	Glu	Asp	Lys	Ser	Glu	Leu	Asp	Asn	Phe	Asn	Lys	Lys	
		835					840					845				
Ser	Asp	Leu	Tyr	Lys	Ile	Ile	Ser	Glu	Leu	Lys	Arg	Gly	Glu	Leu	Asn	
	850					855					860					
Pro	Thr	Ile	Asn	Phe	Asp	Ala	Ile	Phe	Gln	Met	Asn	Asp	Tyr	Gln	Met	
865					870					875					880	
Ser	Val	Lys	Gln	Ser	Phe	Ile	His	Leu	Asn	Asp	Phe	Val	Thr	Asn	Tyr	
				885					890					895		
Lys	Asn	Gln	Ile	Ser	Glu	Arg	Tyr	Leu	Ile	Ile	Lys	Lys	Glu	Leu	Gln	
		900						905					910			
Ser	Glu	Leu	Ser	Arg	Leu	Ile	Asp	Gln	Asn	Glu	Asn	Leu	Asn	Val	Gln	
	915						920					925				
Phe	Asn	Asn	Ala	Lys	Asn	Leu	Thr	Thr	Leu	Gln	Lys	Glu	Glu	Met	Ile	
	930					935					940					
Arg	Ser	Leu	Ala	Ser	Asp	Phe	Ala	Ile	Ala	Tyr	Lys	Pro	Ser	Asn	Ser	
945					950					955					960	
Tyr	Glu	Gln	Leu	Gln	Lys	Ser	Gly	Glu	Ile	Met	Arg	His	Val	Gln	Arg	
			965						970					975		
Ala	Ile	Thr	Glu	Asn	Glu	Lys	Lys	Ile	Glu	Ser	Ile	Gln	Gly	Ser	Leu	

980

985

990

Lys Gln Leu Lys Thr Val Tyr Asn Ser Cys Cys Glu Thr Ile Met Asn  
 995 1000 1005

Asn Ile Asn Lys Leu Asp Asn Thr Leu Arg Phe Ala Lys Lys Glu  
 1010 1015 1020

Lys Asp Pro Leu Leu Leu Ser Asn Phe Asp Ser Val Thr Asp Asn  
 1025 1030 1035

Gly Leu Val Glu Pro Asn Gln Leu Met Asp Asp Leu Ile Asp Phe  
 1040 1045 1050

Ser Asn Thr Phe Asp Asn Ile Ser Asn Glu Gln Leu Asp Asp Phe  
 1055 1060 1065

Ile Tyr Glu Asn Met Asp Arg Asn Ile Asp Phe Glu Phe Glu Gly  
 1070 1075 1080

Phe Asn Asn Asp Phe Val Asp Ile Asp Ala Lys Val Met Asp Ser  
 1085 1090 1095

Met Ser Ala Phe Ser Val Asn Asp Leu Asp Ile Glu Thr Leu Val  
 1100 1105 1110

Pro Asp Arg Thr Ser Asn Phe Ser Ser Leu Leu Asp Glu Asp Leu  
 1115 1120 1125

Phe Glu Ser Ser Gly Asp Phe Ser Leu Asp Tyr  
 1130 1135

<210> 16

<211> 1616

<212> PRT

<213> M. genitalium

<220>

<221> misc\_feature

<223> cytodherence-accessory protein

<220>

<221> misc\_feature

<223> gi|1046097

<400> 16

Met Pro Lys Thr Thr Lys Asn Lys Asn Lys Asn Thr Thr Pro Lys Ser  
 1 5 10 15

Lys Thr Lys Lys Tyr Leu Glu Ser Ala Asn Lys Lys Ser Val Thr Lys  
 20 25 30



335

Lys Val Ser Ser Glu Leu Pro Lys Ser Glu Leu Val Asp Glu Ile Thr  
610 615 620



1000 900 800 700 600 500 400 300 200 100 0

Phe Ile Asn Asn Asp Pro Lys Pro Gln Glu Gly Leu Glu Tyr Lys Val  
625 630 635 640

Asp Phe Leu Glu Thr Glu Pro Lys Ser Leu Phe Asp Glu Lys Thr Thr  
645 650 655

Ile Val Val Glu Ser Glu Pro Pro Phe Ile Gln Pro Asp Leu Ser Leu  
660 665 670

Glu Leu Asp Ser Val Asn Asp Val Asp Lys Ser Leu Glu Thr Lys Thr  
675 680 685

Thr Ser Val Glu Leu Asn His Glu Glu Ile Gly Asn Glu Phe Ile Asn  
690 695 700

Leu Asp Val Ser Glu Lys Glu Val Gln Glu Gln Pro Thr Thr Gln Leu  
705 710 715 720

Glu Thr Asp Ser Glu Phe Val Leu Pro Thr Tyr Gln Ile Val Glu Asp  
725 730 735

Ser Phe Thr Glu Ser Ala Glu Thr Pro Asn Glu Phe Ser Ser Glu Gln  
740 745 750

Lys Asp Thr Leu Glu Phe Ile Ser Gln Thr Gln Glu Val Glu Thr Ser  
755 760 765

Glu Ser Asn Val Pro Thr Val Glu Gln Glu Thr Lys Leu Phe Glu His  
770 775 780

Gln Asp Glu Asn Asn Leu Phe Thr Pro Leu Pro Leu Asp Leu Thr Glu  
785 790 795 800

Ile Ile Glu Ser Asn Ala Leu Phe Asp Ser Lys Pro Asp Glu Lys Glu  
805 810 815

Ser Ser Asp Ser Glu Leu Gln Pro Thr Phe Lys Glu Ile Lys Leu Asp  
820 825 830

Ser Thr Val Glu Val Pro Gln Glu Ser Ser Gln Val Glu Ala Thr Phe  
835 840 845

Asp Thr Val Gln Pro Glu Ala Val Phe Asp Glu Ile Lys Thr Gln Glu  
850 855 860

Leu Gln Pro Glu Ala Thr Thr Glu Val Val Phe Asp Asp His Phe Gln  
865 870 875 880

Pro Asp Val Gln Pro Glu Gln Thr Pro Gln Glu Ala Lys Phe Asp Ser  
885 890 895

Pro Val Glu Ile Pro Gln Glu Ser Ser Gln Ala Glu Phe His Ala Glu  
900 905 910

Gln Ile Ser Asp Glu Ile Lys Leu Glu Glu Lys Thr Glu Ala Val Phe  
915 920 925

Asp His Gln Gln Leu Glu Asn Gln Ser Glu Glu Thr Val Val Thr Pro  
930 935 940

Thr Glu Val Thr Ala Phe Glu Pro Glu Thr Ile Glu Thr Gln Leu Glu  
945 950 955 960

Pro Ser Ser Glu Asp Gln Pro Ser Glu Pro Ala Leu Asp Gln Asn His  
965 970 975

Pro Glu Ile Val Thr Ala Glu Val Glu Gln Ile Phe Asp Gly Thr Lys  
980 985 990

Leu Glu Asp Leu Lys Leu Glu Glu Ala Asn Phe Asp Asn Val Glu Asn  
995 1000 1005

Asn Glu Val Gln Pro Lys Glu Thr Glu Ala Glu Ile Thr Phe Asp  
1010 1015 1020

Glu Thr Lys Glu Leu Gln Gln Glu Thr Ser Ser Glu Pro Leu Ser  
1025 1030 1035

Thr Glu Glu Leu Lys Ser Glu Ala Thr Phe Asp Asn Val Ser Glu  
1040 1045 1050

Ala Glu Ser Glu Ala Val Phe Glu Lys Pro Gln Leu Glu Thr Gln  
1055 1060 1065

Thr Glu Lys Ile Leu Glu Glu Glu Pro Lys Ser Glu Pro Val Asp  
1070 1075 1080

Gln Leu Ile Thr Glu Ala Ser Phe Asp Thr Val Lys His Glu Ala  
1085 1090 1095

Val Phe Asp Lys Asn Gln Thr Gln Thr Glu Gly Leu Glu Glu Pro  
1100 1105 1110

Gln Val Ser Ser Glu Ala Glu Val Val Asp Gln Thr Thr Thr Asp  
1115 1120 1125

Thr Val Gly Glu Pro Glu Ala Val Phe Asp Val Gln Pro Glu Lys  
1130 1135 1140

Thr Thr Glu Val Lys Phe Asp Asp Val Glu Asn Gln Gln Lys Val  
1145 1150 1155

Ile Ser Glu Pro Gln Val Glu Gln Gln Pro Gly Glu Ala Val Phe  
1160 1165 1170

Glu Pro Ser Ala Glu Ala Lys Phe Asp Ser Pro Val Glu Ser Val  
1175 1180 1185

Gln Asp Ser Gln Pro Glu Pro Val Leu Glu Glu Val Gln Thr Gln

1190 1195 1200  
Pro Glu Ile Gln Pro Val Glu Ser Gln Pro Glu Ala Thr Phe Asp  
1205 1210 1215  
Thr Val Gln Pro Glu Gln Thr Pro Gln Glu Ala Lys Phe Asp Ser  
1220 1225 1230  
Pro Val Glu Thr Val Glu Gln Pro Glu Phe Ser Ser Glu Pro Thr  
1235 1240 1245  
Gln Gln His Val Glu Ser Glu Ala Ser Phe Asp Glu Pro Asn Tyr  
1250 1255 1260  
Asp Phe Asp Glu Pro Asn Tyr Asp Phe Asp Gln Pro Ser Tyr Asp  
1265 1270 1275  
Ser Asp Leu Gln Pro Ser Glu Pro Gln Tyr Asp Val Asp Glu Pro  
1280 1285 1290  
Asn Tyr Asp Phe Asp Glu Pro Asn Tyr Glu Ile Glu Ser Lys Pro  
1295 1300 1305  
Ser Glu Pro Gln Phe Glu Pro Gln Val Glu Gln Gln Pro Gly Glu  
1310 1315 1320  
Ala Val Phe Glu Pro Ser Ala Glu Ala Lys Phe Asp Ser Pro Val  
1325 1330 1335  
Glu Ser Val Gln Asp Ser Gln Pro Glu Pro Leu Leu Glu Glu Val  
1340 1345 1350  
Gln Thr Gln Pro Glu Ile Gln Pro Val Glu Ser Gln Pro Glu Ala  
1355 1360 1365  
Thr Phe Asp Thr Val Gln Pro Glu Gln Thr Pro Gln Glu Ala Lys  
1370 1375 1380  
Phe Asp Ser Pro Val Glu Thr Ile Gln Glu Pro Gln Val Ser Ser  
1385 1390 1395  
Glu Pro Glu Val Val Val Gln Pro Asn Phe Glu Glu Arg Lys Pro  
1400 1405 1410  
Glu Thr Val Leu Glu Glu Pro Gln Ala Asp Glu Ile Gln Pro Glu  
1415 1420 1425  
Ala Ser Glu Glu Glu Ser Leu Asp Trp Glu Leu Leu Val Gly Asn  
1430 1435 1440  
Asn Ser Tyr Gly His Tyr Glu Pro Asp Gly Glu Trp Val Trp Ala  
1445 1450 1455  
Gly Phe Phe Gly Asp Asp Gln Lys Trp Asn Lys Asp Ala Thr Val  
1460 1465 1470

Lys Trp Ala Arg Glu Arg Asp Tyr Leu Pro Leu Ile Gly Asp Glu  
 1475 1480 1485  
 Val Tyr Gly Arg Tyr Asn Asn Lys Gly Glu Trp Ile Trp Tyr Gly  
 1490 1495 1500  
 Phe Tyr Asp Glu Ser Gly Asp Trp Val Leu Val Asp Glu Gln Trp  
 1505 1510 1515  
 Lys Asn Arg Gln Pro Arg Ile Asn Glu Ala Pro Lys Phe Trp Glu  
 1520 1525 1530  
 Lys Leu Ile Gly Asn Glu Glu Tyr Gly Tyr Tyr Glu Asp Asn Glu  
 1535 1540 1545  
 Trp Asn Trp Tyr Asp Gly Glu Phe Asp Ser Glu Gly Asn Trp Leu  
 1550 1555 1560  
 Val Phe Gln Ser Glu Glu Thr Glu Asn Leu Asn Glu Asp Ile Thr  
 1565 1570 1575  
 Lys Asp Ile Pro Ala Leu Glu Gly Tyr Asp Ile Asp Ser Ile Asp  
 1580 1585 1590  
 Ala Asp Glu Trp Leu Ser Gln Phe Ser Ala Asp Asp Ala Lys Asp  
 1595 1600 1605  
 Val Phe Gly Ser Asn Asp Lys Lys  
 1610 1615

<210> 17  
 <211> 274  
 <212> PRT  
 <213> M. pneumoniae  
 <220>  
 <221> misc\_feature  
 <223> 30K adhesin-related protein

<220>  
 <221> misc\_feature  
 <223> gi|1674069

<400> 17

Met Lys Leu Pro Pro Arg Arg Lys Leu Lys Leu Phe Leu Leu Ala Trp  
 1 5 10 15  
 Met Leu Val Leu Phe Ser Ala Leu Ile Val Leu Ala Thr Leu Ile Leu  
 20 25 30  
 Val Gln His Asn Asn Thr Glu Leu Thr Glu Val Lys Ser Glu Leu Ser

35					40					45					
Pro	Leu	Asn	Val	Val	Leu	His	Ala	Glu	Glu	Asp	Thr	Val	Gln	Ile	Gln
50						55					60				
Gly	Lys	Pro	Ile	Thr	Glu	Gln	Ala	Trp	Phe	Ile	Pro	Thr	Val	Ala	Gly
65					70				75						80
Cys	Phe	Gly	Phe	Ser	Ala	Leu	Ala	Ile	Ile	Leu	Gly	Leu	Ala	Ile	Gly
				85					90					95	
Leu	Pro	Ile	Val	Lys	Arg	Lys	Glu	Lys	Arg	Leu	Leu	Glu	Glu	Lys	Glu
			100					105					110		
Arg	Gln	Glu	Gln	Leu	Ala	Glu	Gln	Leu	Gln	Arg	Ile	Ser	Ala	Gln	Gln
		115					120					125			
Glu	Glu	Gln	Gln	Ala	Leu	Glu	Gln	Gln	Ala	Ala	Ala	Glu	Ala	His	Ala
	130					135					140				
Glu	Ala	Glu	Val	Glu	Pro	Ala	Pro	Gln	Pro	Val	Pro	Val	Pro	Pro	Gln
145					150					155					160
Pro	Gln	Val	Gln	Ile	Asn	Phe	Gly	Pro	Arg	Thr	Gly	Phe	Pro	Pro	Gln
				165					170						175
Pro	Gly	Met	Ala	Pro	Arg	Pro	Gly	Met	Pro	Pro	His	Pro	Gly	Met	Ala
		180						185					190		
Pro	Arg	Pro	Gly	Phe	Pro	Pro	Gln	Pro	Gly	Met	Ala	Pro	Arg	Pro	Gly
	195						200					205			
Met	Pro	Pro	His	Pro	Gly	Met	Ala	Pro	Arg	Pro	Gly	Phe	Pro	Pro	Gln
	210					215					220				
Pro	Gly	Met	Ala	Pro	Arg	Pro	Gly	Met	Pro	Pro	His	Pro	Gly	Met	Ala
225					230					235					240
Pro	Arg	Pro	Gly	Phe	Pro	Pro	Gln	Pro	Gly	Met	Ala	Pro	Arg	Pro	Gly
			245						250					255	
Met	Gln	Pro	Pro	Arg	Pro	Gly	Met	Pro	Pro	Gln	Pro	Gly	Phe	Pro	Pro
		260						265					270		

Lys Arg

<210> 18  
 <211> 256  
 <212> PRT  
 <213> M. tuberculosis

<220>  
 <221> misc\_feature  
 <223> PE\_PGRS

<220>  
<221> misc\_feature  
<223> gi|3261822

<400> 18

Met Ile Gly Asp Gly Ala Asn Gly Gly Pro Gly Gln Pro Gly Gly Pro  
1 5 10 15  
Gly Gly Leu Leu Tyr Gly Asn Gly Gly His Gly Gly Ala Gly Ala Ala  
20 25 30  
Gly Gln Asp Arg Gly Ala Gly Asn Ser Ala Gly Leu Ile Gly Asn Gly  
35 40 45  
Gly Ala Gly Gly Ala Gly Gly Asn Gly Gly Ile Gly Gly Ala Gly Ala  
50 55 60  
Pro Gly Gly Leu Gly Gly Asp Gly Gly Lys Gly Gly Phe Ala Asp Glu  
65 70 75 80  
Phe Thr Gly Gly Phe Ala Gln Gly Gly Arg Gly Gly Phe Gly Gly Asn  
85 90 95  
Gly Asn Thr Gly Ala Ser Gly Gly Met Gly Gly Ala Gly Gly Ala Gly  
100 105 110  
Gly Ala Gly Gly Ala Gly Gly Leu Leu Ile Gly Asp Gly Gly Ala Gly  
115 120 125  
Gly Ala Gly Gly Ile Gly Gly Ala Gly Gly Val Gly Gly Gly Gly Gly  
130 135 140  
Ala Gly Gly Thr Gly Gly Gly Gly Val Ala Ser Ala Phe Gly Gly Gly  
145 150 155 160  
Asn Ala Phe Gly Gly Arg Gly Gly Asp Gly Gly Asp Gly Gly Asp Gly  
165 170 175  
Gly Thr Gly Gly Ala Gly Gly Ala Arg Gly Ala Gly Gly Ala Gly Gly  
180 185 190  
Ala Gly Gly Trp Leu Ser Gly His Ser Gly Ala His Gly Ala Met Gly  
195 200 205  
Ser Gly Gly Glu Gly Gly Ala Gly Gly Gly Gly Gly Ala Arg Gly Glu  
210 215 220  
Ala Gly Ala Gly Gly Gly Thr Ser Thr Gly Thr Asn Pro Gly Lys Ala  
225 230 235 240  
Gly Ala Pro Gly Thr Gln Gly Asp Ser Gly Asp Pro Gly Pro Pro Gly

245

250

255

<210> 19  
 <211> 484  
 <212> PRT  
 <213> M. tuberculosis

<220>  
 <221> misc\_feature  
 <223> PE\_PGRS

<220>  
 <221> misc\_feature  
 <223> gi|2894254

<400> 19

Ala Gln Ala Ser Pro Ala Ala His Gly Gly Ser Gly Gly Ala Gly Gly  
 1 5 10 15

Asn Gly Gly Ala Gly Ser Ala Gly Asn Gly Gly Ala Gly Gly Ala Gly  
 20 25 30

Gly Asn Gly Gly Ala Gly Gly Asn Gly Gly Gly Gly Asp Ala Gly Asn  
 35 40 45

Ala Gly Ser Gly Gly Asn Gly Gly Lys Gly Gly Asp Gly Val Gly Pro  
 50 55 60

Gly Ser Thr Gly Gly Ala Gly Gly Lys Gly Gly Ala Gly Ala Asn Gly  
 65 70 75 80

Gly Ser Ser Asn Gly Asn Ala Arg Gly Gly Asn Ala Gly Asn Gly Gly  
 85 90 95

His Gly Gly Ala Gly Gly Ser Gly Asp Thr Gly Gly Ala Gly Gly Ala  
 100 105 110

Gly Gly Gln Gly Gly Phe Gly Gly Thr Gly Gly Ser Gly Ser Gly Ile  
 115 120 125

Gly Gly Gly Ala Gly Gly Asn Gly Gly Asn Gly Gly Ala Gly Gly Thr  
 130 135 140

Gly Val Val Leu Gly Gly Lys Gly Gly Asp Gly Gly Asn Gly Asp His  
 145 150 155 160

Gly Gly Pro Ala Thr Asn Pro Gly Ser Gly Ser Arg Gly Gly Ala Gly  
 165 170 175

Gly Ser Gly Gly Asn Gly Gly Ala Gly Gly Asn Ala Thr Gly Ser Gly  
 180 185 190

Gly Lys Gly Gly Ala Gly Gly Asn Gly Gly Asp Gly Ser Phe Gly Ala  
195 200 205

Thr Ser Gly Pro Ala Ser Ile Gly Val Thr Gly Ala Pro Gly Gly Asn  
210 215 220

Gly Gly Lys Gly Gly Ala Gly Gly Ser Asn Pro Asn Gly Ser Gly Gly  
225 230 235 240

Asp Gly Gly Lys Gly Gly Asn Gly Gly Ala Gly Gly Asn Gly Gly Ser  
245 250 255

Ile Gly Ala Asn Ser Gly Ile Val Gly Gly Ser Gly Gly Ala Gly Gly  
260 265 270

Ala Gly Gly Ala Gly Gly Asn Gly Ser Leu Ser Ser Gly Glu Gly Gly  
275 280 285

Lys Gly Gly Asp Gly Gly His Gly Gly Asp Gly Val Gly Gly Asn Ser  
290 295 300

Ser Val Thr Gln Gly Gly Ser Gly Gly Gly Gly Gly Ala Gly Gly Ala  
305 310 315 320

Gly Gly Ser Gly Phe Phe Gly Gly Lys Gly Gly Phe Gly Gly Asp Gly  
325 330 335

Gly Gln Gly Gly Pro Asn Gly Gly Gly Thr Val Gly Thr Val Ala Gly  
340 345 350

Gly Gly Gly Asn Gly Gly Val Gly Gly Arg Gly Gly Asp Gly Val Phe  
355 360 365

Ala Gly Ala Gly Gly Gln Gly Gly Leu Gly Gly Gln Gly Gly Asn Gly  
370 375 380

Gly Gly Ser Thr Gly Gly Asn Gly Gly Leu Gly Gly Ala Gly Gly Gly  
385 390 395 400

Gly Gly Asn Ala Pro Asp Gly Gly Phe Gly Gly Asn Gly Gly Lys Gly  
405 410 415

Gly Gln Gly Gly Ile Gly Gly Gly Thr Gln Ser Ala Thr Gly Leu Gly  
420 425 430

Gly Asp Gly Gly Asp Gly Gly Asp Gly Gly Asn Gly Gly Asn Ser Gly  
435 440 445

Ala Lys Ala Gly Gly Ala Gly Gly Lys Gly Gln Ala Gly Gln Pro Asn  
450 455 460

Ser Gly Thr Glu Pro Gly Phe Gly Gly Asp Gly Gly Leu Gly Gly Ala  
465 470 475 480

Gly Ala Thr Pro



<210> 20  
<211> 1079  
<212> PRT  
<213> M. tuberculosis

<220>  
<221> misc\_feature  
<223> PE\_PGRS

<220>  
<221> misc\_feature  
<223> gi|2924449

<400> 20

Pro Gln Gly Ala Asp Gly Asn Ala Gly Asn Gly Gly Asp Gly Gly Val  
1 5 10 15  
Gly Gly Asn Gly Gly Asn Gly Ala Asp Asn Thr Thr Thr Ala Ala Ala  
20 25 30  
Gly Thr Thr Gly Gly Ala Gly Gly Ala Gly Gly Ala Gly Gly Thr Gly  
35 40 45  
Gly Thr Gly Gly Ala Ala Gly Thr Gly Thr Gly Gly Gln Gln Gly Asn  
50 55 60  
Gly Gly Asn Gly Gly Asn Gly Gly Thr Gly Gly Lys Gly Gly Thr Gly  
65 70 75 80  
Gly Asp Gly Ala Leu Ala Gly Ser Ser Gly Gly Ala Gly Gly Lys Gly  
85 90 95  
Gly Asn Gly Gly Asp Ala Gly Lys Ala Gly Thr Gly Ser Ala Pro Gly  
100 105 110  
Thr Ala Gly Thr Gly Gly Asp Gly Gly Lys Gly Gly Asn Gly Gly Ile  
115 120 125  
Gly Ala Ala Gly Thr Thr Gly Pro Val Gly Thr Gly Ala Ser Gly Gly  
130 135 140  
Thr Gly Gly Ser Gly Gly Ala Gly Gly Thr Gly Gly Asp Gly Gly Ala  
145 150 155 160  
Ala Asn Gly Gly Thr Ala Gly Ala Gly Gly Ala Gly Gly Asn Gly Gly  
165 170 175  
Lys Gly Gly Asp Gly Gly Ala Gly Val Thr Ser Ser Thr Ala Gly Asn  
180 185 190

Ser Gly Gly Ala Gly Gly Ser Gly Gly Lys Gly Gly Asp Ala Gly Ala  
 195 200 205  
 Gly Gly Ala Gly Ala Thr Pro Gly Ala Asn Gly Ile Ala Gly Asn Gly  
 210 215 220  
 Gly Asp Gly Gly Asp Gly Ala Ala Gly Ala Val Gly Ile Ser Gly Ala  
 225 230 235 240  
 Thr Gly Ala Gly Asp Gly Gly His Gly Gly Thr Gly Ala Ala Gly Gly  
 245 250 255  
 Asn Gly Gly Thr Gly Gly Ala Gly Gly Ser Gly Ile Asp Gly Val Gly  
 260 265 270  
 Gly Gly Thr Gly Gly Thr Gly Gly Asn Gly Gly Asn Gly Ala Ile Gly  
 275 280 285  
 Gly Ala Gly Gly Asp Ala Gly Gly Ser Gly Asn Ser Gly Gly Asn Gly  
 290 295 300  
 Gly Ile Gly Gly Lys Gly Gly Asn Ala Gly Ala Gly Gly Ala Ala Gly  
 305 310 315 320  
 Ser Asn Gly Gly Thr Val Gly Ala Asn Gly Thr Gly Gly Asp Gly Gly  
 325 330 335  
 Asn Gly Gly Ala Ala Gly Ala Ala Thr Ala Gly Ser Asn Gly Gly Ala  
 340 345 350  
 Gly Thr Gly Ser Ala Gly Gly Asn Gly Gly Thr Gly Gly Arg Gly Gly  
 355 360 365  
 Ser Gly Gly Ala Gly Gly Asp Gly Ile Gly Gly Val Gly Gly Gly Lys  
 370 375 380  
 Gly Gly Asn Gly Ala Asp Gly Glu Val Gly Gly Ala Gly Gly Ala Gly  
 385 390 395 400  
 Gly Ser Gly Pro Asn Thr Ser Pro Gly Gly Asn Gly Gly Gln Gly Gly  
 405 410 415  
 Gln Gly Gly Ser Gly Gly Ala Gly Gly Ala Ala Gly Ala Gly Gly Ala  
 420 425 430  
 Gly Gly Gly Ala Asn Gly Thr Ala Gly Asn Gly Gly Gln Gly Gly Ala  
 435 440 445  
 Gly Gly Thr Gly Gly Ala Gly Ala Ala Ser Ser Ala Thr Asn Gly Gly  
 450 455 460  
 Ser Gly Gly Ala Gly Gly Thr Gly Gly Asp Gly Gly Ser Gly Gly Ala  
 465 470 475 480  
 Gly Gly Thr Gly Gly Ala Gly Gly Thr Gly Gly Ala Ala Gly Asp Gly

485

490

495

Gly Gln Gly Gly Gln Gly Gly Ala Gly Gly Gly Ala Gly Gly Gln Gly  
500 505 510

Gly Ala Gly Gly Ala Gly Gly Thr Gly Gly Asn Gly Gly Asn Ile Thr  
515 520 525

Gly Gly Thr Ala Gly Thr Ala Gly Ala Ala Gly Asn Gly Gly Ala Ala  
530 535 540

Gly Lys Gly Gly Ala Gly Gly Gln Gly Gly Thr Gly Gly Gly Thr Gly  
545 550 555 560

Gly Gln Gly Gly Ala Gly Gly Asp Gly Gly Ala Gly Gly Thr Gly Gly  
565 570 575

Asp Arg Thr Val Gly Gly Gly Thr Val Pro Ala Gly Ser Gly Gly Gln  
580 585 590

Gly Gly Asn Ala Gly Gly Gly Gly Ala Gly Gly Gln Gly Gly Ala Asp  
595 600 605

Gly Gly Ser Gly Gly Asp Gly Gly Asp Ala Gly Thr Gly Gly Asn Gly  
610 615 620

Gly Asn Gly Gly Asn Arg Asn Ser Gly Asn Gly Thr Gly Gly Ala Gly  
625 630 635 640

Gly Asn Gly Gly Gly Gly Ala Asn Gly Gly Ala Gly Gly Ala Gly Gly  
645 650 655

Ser Gly Gly Gly Thr Gly Gly Asn Gly Gly Ala Gly Gly Asp Ala Gly  
660 665 670

Asp Ala Gly Asn Gly Gly Asn Gly Asn Gly Thr Gly Asn Gly Gly Asn  
675 680 685

Gly Gly Asn Gly Gly Ile Ala Gly Met Gly Gly Asn Gly Gly Ala Gly  
690 695 700

Thr Gly Ser Gly Asn Gly Gly Asn Gly Gly Ser Gly Gly Asn Gly Gly  
705 710 715 720

Asn Ala Gly Met Gly Gly Asn Ser Gly Thr Gly Ser Gly Asp Gly Gly  
725 730 735

Ala Gly Gly Asn Gly Gly Ala Ala Gly Thr Gly Gly Thr Gly Gly Asp  
740 745 750

Gly Gly Leu Thr Gly Thr Gly Gly Thr Gly Gly Ser Gly Gly Thr Gly  
755 760 765

Gly Asp Gly Gly Asn Gly Gly Asn Gly Ala Asp Asn Thr Ala Asn Met  
770 775 780

Thr Ala Gln Ala Gly Gly Asp Gly Gly Asn Gly Gly Asp Gly Gly Phe  
785 790 795 800

Gly Gly Gly Ala Gly Ala Gly Gly Gly Gly Leu Thr Ala Gly Ala Asn  
805 810 815

Gly Thr Gly Gly Gln Gly Gly Ala Gly Gly Asp Gly Gly Asn Gly Ala  
820 825 830

Ile Gly Gly His Gly Pro Leu Thr Asp Asp Pro Gly Gly Asn Gly Gly  
835 840 845

Thr Gly Gly Asn Gly Gly Thr Gly Gly Thr Gly Gly Ala Gly Ile Gly  
850 855 860

Ser Leu Gly Gly Gly Thr Gly Gly Asp Gly Gly Asn Gly Gly Asn Gly  
865 870 875 880

Gly Thr Gly Gly Glu Gly Gly Glu Val Gly Gly Ala Gly Gly Thr Gly  
885 890 895

Gly Ala Ala Gly Asn Gly Gly Asp Gly Gly Thr Gly Gly Thr Gly Gly  
900 905 910

Gly Asp Gly Gly Ala Gly Gly Thr Gly Gly Thr Gly Gly Thr Gly Gly  
915 920 925

Leu Gly Asp Pro Arg Val Gly Gly Ser Gly Gly Asp Gly Gly Thr Gly  
930 935 940

Gly Ser Gly Gly Ala Ala Gly Asn Gly Gly Asn Gly Gly Asn Ala Gly  
945 950 955 960

Ala Gly Gly Asn Gly Asn Gly Gly Thr Gly Gly Ala Gly Gly Ile Gly  
965 970 975

Gly Thr Gly Gly Asn Gly Gly Asp Ala Glu Pro Gly Val Pro Pro Gly  
980 985 990

Ala Gly Gly Ala Gly Gly Ala Gly Thr Thr Gly Gly Lys Gly Gly Thr  
995 1000 1005

Gly Gly Asn Gly Ser Gly Thr Gly Ser Gly Gly Thr Gly Gly Asp  
1010 1015 1020

Gly Gly Thr Gly Gly Gly Gly Gly Asn Gly Gly Thr Gly Trp Asn  
1025 1030 1035

Gly Gly Lys Gly Asp Thr Gly Ser Gly Gly Gly Ala Gly Asp Gly  
1040 1045 1050

Gly Lys Ala Pro Ala Gly Gly Thr Gly Gly Ala Gly Gly Asp Gly  
1055 1060 1065

Gly Ala Gly Gly Lys Gly Gly Ser Gly Gly Val  
1070 1075

<210> 21  
<211> 354  
<212> PRT  
<213> M. tuberculosis

<220>  
<221> misc\_feature  
<223> PPE

<220>  
<221> misc\_feature  
<223> gi|1781260

<400> 21

Met Pro Gly Arg Phe Arg Asn Phe Gly Ser Gln Asn Leu Gly Ser Gly  
1 5 10 15  
Asn Ile Gly Ser Thr Asn Val Gly Ser Gly Asn Ile Gly Ser Thr Asn  
20 25 30  
Val Gly Ser Gly Asn Ile Gly Asp Thr Asn Phe Gly Asn Gly Asn Asn  
35 40 45  
Gly Asn Phe Asn Phe Gly Ser Gly Asn Thr Gly Ser Asn Asn Ile Gly  
50 55 60  
Phe Gly Asn Thr Gly Ser Gly Asn Phe Gly Phe Gly Asn Thr Gly Asn  
65 70 75 80  
Asn Asn Ile Gly Ile Gly Leu Thr Gly Asp Gly Gln Ile Gly Ile Gly  
85 90 95  
Gly Leu Asn Ser Gly Ser Gly Asn Ile Gly Phe Gly Asn Ser Gly Thr  
100 105 110  
Gly Asn Val Gly Leu Phe Asn Ser Gly Thr Gly Asn Val Gly Phe Gly  
115 120 125  
Asn Ser Gly Thr Ala Asn Thr Gly Phe Gly Asn Ala Gly Asn Val Asn  
130 135 140  
Thr Gly Phe Trp Asn Gly Gly Ser Thr Asn Thr Gly Leu Ala Asn Ala  
145 150 155 160  
Gly Ala Gly Asn Thr Gly Phe Phe Asp Ala Gly Asn Tyr Asn Phe Gly  
165 170 175  
Ser Leu Asn Ala Gly Asn Ile Asn Ser Ser Phe Gly Asn Ser Gly Asp  
180 185 190

Gly Asn Ser Gly Phe Leu Asn Ala Gly Asp Val Asn Ser Gly Val Gly  
 195 200 205  
 Asn Ala Gly Asp Val Asn Thr Gly Leu Gly Asn Ser Gly Asn Ile Asn  
 210 215 220  
 Thr Gly Gly Phe Asn Pro Gly Thr Leu Asn Thr Gly Phe Phe Ser Ala  
 225 230 235 240  
 Met Thr Gln Ala Gly Pro Asn Ser Gly Phe Phe Asn Ala Gly Thr Gly  
 245 250 255  
 Asn Ser Gly Phe Gly His Asn Asp Pro Ala Gly Ser Gly Asn Ser Gly  
 260 265 270  
 Ile Gln Asn Ser Gly Phe Gly Asn Ser Gly Tyr Val Asn Thr Ser Thr  
 275 280 285  
 Thr Ser Met Phe Gly Gly Asn Ser Gly Val Leu Asn Thr Gly Tyr Gly  
 290 295 300  
 Asn Ser Gly Phe Tyr Asn Ala Ala Val Asn Asn Thr Gly Ile Phe Val  
 305 310 315 320  
 Thr Gly Val Met Ser Ser Gly Phe Phe Asn Phe Gly Thr Gly Asn Ser  
 325 330 335  
 Gly Leu Leu Val Ser Gly Asn Gly Leu Ser Gly Phe Phe Lys Asn Leu  
 340 345 350  
 Phe Gly

<210> 22  
 <211> 29  
 <212> PRT  
 <213> Pseudomonas aeruginosa

<220>  
 <221> misc\_feature  
 <223> KdpF protein

<220>  
 <221> misc\_feature  
 <223> gi|9947600

<400> 22

Met Thr Val Leu Asp Trp Leu Ser Leu Ala Leu Ala Thr Gly Leu Phe  
 1 5 10 15

Val Tyr Leu Leu Val Ala Leu Leu Arg Ala Asp Arg Ala

<210> 23  
 <211> 352  
 <212> PRT  
 <213> Pseudomonas aeruginosa

<220>  
 <221> misc\_feature  
 <223> alginate regulatory protein AlgP

<220>  
 <221> misc\_feature  
 <223> gi|9951563

<400> 23

Met	Ser	Ala	Asn	Lys	Lys	Pro	Val	Thr	Thr	Pro	Leu	His	Leu	Leu	Gln
1				5					10					15	
Gln	Leu	Ser	His	Ser	Leu	Val	Glu	His	Leu	Glu	Gly	Ala	Cys	Lys	Gln
			20					25					30		
Ala	Leu	Val	Asp	Ser	Glu	Lys	Leu	Leu	Ala	Lys	Leu	Glu	Lys	Gln	Arg
		35					40					45			
Gly	Lys	Ala	Gln	Glu	Lys	Leu	His	Lys	Ala	Arg	Thr	Lys	Leu	Gln	Asp
	50					55					60				
Ala	Ala	Lys	Ala	Gly	Lys	Thr	Lys	Ala	Gln	Ala	Lys	Ala	Arg	Glu	Thr
65					70				75					80	
Ile	Ser	Asp	Leu	Glu	Glu	Ala	Leu	Asp	Thr	Leu	Lys	Ala	Arg	Gln	Ala
			85						90					95	
Asp	Thr	Arg	Thr	Tyr	Ile	Val	Gly	Leu	Lys	Arg	Asp	Val	Gln	Glu	Ser
			100					105					110		
Leu	Lys	Leu	Ala	Gln	Gly	Val	Gly	Lys	Val	Lys	Glu	Ala	Ala	Gly	Lys
		115					120					125			
Ala	Leu	Glu	Ser	Arg	Lys	Ala	Lys	Pro	Ala	Thr	Lys	Pro	Ala	Ala	Lys
		130				135					140				
Ala	Ala	Ala	Lys	Pro	Ala	Val	Lys	Thr	Val	Ala	Ala	Lys	Pro	Ala	Ala
145				150						155					160
Lys	Pro	Ala	Ala	Lys	Pro	Ala	Ala	Lys	Pro	Ala	Ala	Lys	Pro	Ala	Ala
			165					170					175		
Lys	Thr	Ala	Ala	Ala	Lys	Pro	Ala	Ala	Lys	Pro	Thr	Ala	Lys	Pro	Ala
			180					185					190		

Ala Lys Pro Ala Ala Lys Pro Ala Ala Lys Thr Ala Ala Ala Lys Pro  
195 200 205

Ala Ala Lys Pro Ala Ala Lys Pro Val Ala Lys Pro Ala Ala Lys Pro  
210 215 220

Ala Ala Lys Thr Ala Ala Ala Lys Pro Ala Ala Lys Pro Ala Ala Lys  
225 230 235 240

Pro Val Ala Lys Pro Thr Ala Lys Pro Ala Ala Lys Thr Ala Ala Ala  
245 250 255

Lys Pro Ala Ala Lys Pro Ala Ala Lys Pro Ala Ala Lys Pro Ala Ala  
260 265 270

Lys Pro Val Ala Lys Ser Ala Ala Ala Lys Pro Ala Ala Lys Pro Ala  
275 280 285

Ala Lys Pro Ala Ala Lys Pro Ala Ala Lys Pro Ala Ala Lys Pro Val  
290 295 300

Ala Ala Lys Pro Ala Ala Thr Lys Pro Ala Thr Ala Pro Ala Ala Lys  
305 310 315 320

Pro Ala Ala Thr Pro Ser Ala Pro Ala Ala Ala Ser Ser Ala Ala Ser  
325 330 335

Ala Thr Pro Ala Ala Gly Ser Asn Gly Ala Ala Pro Thr Ser Ala Ser  
340 345 350

<210> 24

<211> 309

<212> PRT

<213> Pseudomonas aeruginosa

<220>

<221> misc\_feature

<223> polyhydroxyalkanoate synthesis protein PhaF

<220>

<221> misc\_feature

<223> gi|9951352

<400> 24

Met Ala Gly Lys Lys Lys Ser Glu Lys Glu Ser Ser Trp Ile Gly Glu  
1 5 10 15

Ile Glu Lys Tyr Ser Arg Gln Ile Trp Leu Ala Gly Leu Gly Ala Tyr  
20 25 30

Ser Lys Val Ser Lys Asp Gly Ser Lys Leu Phe Glu Thr Leu Val Lys  
35 40 45



Asp Gly Glu Lys Ala Glu Lys Glu Ala Lys Ser Asp Val Asp Ala Gln  
50 55 60

Val Gly Ala Ala Lys Ala Ser Ala Arg Ser Ala Lys Ser Lys Val Asp  
65 70 75 80

Glu Val Arg Asp Arg Ala Leu Gly Lys Trp Ser Glu Leu Glu Glu Ala  
85 90 95

Phe Asp Lys Arg Leu Asn Ser Ala Ile Ser Arg Leu Gly Val Pro Ser  
100 105 110

Arg Asn Glu Val Lys Glu Leu His Ser Lys Val Asp Thr Leu Thr Lys  
115 120 125

Gln Ile Glu Lys Leu Thr Gly Val Ser Val Lys Pro Ala Ala Lys Ala  
130 135 140

Ala Ala Lys Pro Ala Ala Lys Pro Ala Ala Lys Pro Ala Ala Lys Thr  
145 150 155 160

Ala Ala Ala Lys Pro Ala Ala Lys Pro Ala Ala Lys Ala Ala Lys  
165 170 175

Pro Ala Ala Lys Pro Ala Ala Lys Lys Thr Ala Ala Lys Thr Ala Ala  
180 185 190

Ala Lys Pro Ala Ala Lys Pro Ala Ala Lys Pro Thr Ala Lys Ala Ala  
195 200 205

Ala Lys Pro Ala Thr Lys Pro Ala Ala Lys Ala Ala Ala Lys Pro Ala  
210 215 220

Ala Lys Pro Ala Ala Ala Lys Pro Ala Ala Lys Pro Ala Ala Lys Pro  
225 230 235 240

Ala Ala Ala Thr Ala Ala Lys Pro Ala Ala Lys Pro Ala Ala Lys Pro  
245 250 255

Ala Ala Lys Lys Pro Ala Ala Lys Lys Pro Ala Ala Lys Pro Ala Ala  
260 265 270

Ala Lys Pro Ala Ala Pro Ala Ala Ser Ser Ser Ala Pro Ala Ala Pro  
275 280 285

Ala Ala Thr Pro Ala Ala Ser Ala Pro Ala Ala Asn Ala Pro Ala Thr  
290 295 300

Pro Ser Ser Gln Gly  
305

<210> 25  
<211> 632  
<212> PRT

<213> T. pallidum

<220>

<221> misc\_feature

<223> dicarboxylate transporter (dctM)

<220>

<221> misc\_feature

<223> gi|3323280

<400> 25

Met Lys Gly Thr Arg Gly Gln Leu Val Leu Arg Ser Ile Ala Leu Leu  
1 5 10 15  
Leu Ile Gly Thr Leu Met Leu Leu Pro Leu Val Leu Phe Leu Ile Glu  
20 25 30  
Arg Ile Phe Gly Phe Leu Thr Arg Gly Val Gly Ser Glu Val Phe Ser  
35 40 45  
Ala His Glu Asp Phe Ile Phe Leu Phe Phe Ser Ser Ser Asp Ala Ala  
50 55 60  
Val Ala Gln Leu Ala Phe Val Phe Ser Cys Val Ala Gly Ile Tyr Ala  
65 70 75 80  
Ala Arg Glu Arg Lys His Leu Ser Val Thr Leu Phe Ser Cys Asp Val  
85 90 95  
Asp Arg Pro Met His Arg Val Leu Ser Phe Leu Ser Ala Ile Cys Thr  
100 105 110  
Val Ala Val Leu Ser Ala Cys Phe Phe Ala Ser Gly Pro Asn Ile Val  
115 120 125  
Ala Val Phe Arg Lys Glu Glu Ala Val Trp Gly Val Pro Leu Arg Trp  
130 135 140  
Ile Phe Thr Ala Leu Pro Cys Met Tyr Gly Ala Leu Leu Phe His Tyr  
145 150 155 160  
Ala Arg Glu Val Lys Cys Arg Thr Cys Val Ile Val Gly Leu Leu Val  
165 170 175  
Gly Val Leu Ile Ser Thr Gly Ser Ile Ala Ser Val Leu Phe His Leu  
180 185 190  
Phe Asp Leu Thr Val Pro Leu Leu Asp Ser Val Phe His Gly Trp Val  
195 200 205  
Ala Val Gly Thr Arg Leu Phe Trp Pro Phe Val Leu Leu Leu Leu Leu  
210 215 220

Leu Ala Ala Gln Gly Leu Pro Leu Phe Ile Thr Leu Leu Ala Ile Ala  
225 230 235 240

Tyr Leu Ala Leu Ser Val Asp Gly Gly Tyr Val Asp Thr Leu Pro Leu  
245 250 255

Glu Gly Tyr Lys Ile Leu Thr Asp Thr Gly Gly Ile Val Ala Val Pro  
260 265 270

Leu Phe Ala Thr Ala Ser Leu Leu Leu Ala Arg Gly Ser Thr Gly Thr  
275 280 285

Arg Leu Leu Arg Leu Val Lys Glu Ala Val Gly Trp Leu Arg Gly Gly  
290 295 300

Ala Ala Val Ala Cys Val Ala Val Ala Ala Leu Phe Thr Ser Leu Thr  
305 310 315 320

Gly Val Ser Gly Val Thr Ile Leu Ala Leu Gly Ser Leu Phe Lys Leu  
325 330 335

Ile Leu Thr Gly Asn Lys Tyr Pro Glu His Asp Ala Glu Ala Leu Ile  
340 345 350

Thr Ser Ser Gly Ala Ile Gly Leu Leu Phe Pro Pro Ser Ala Ala Ile  
355 360 365

Ile Ile Phe Gly Ala Thr Asn Ile Leu Thr Val His Ile Val Asp Leu  
370 375 380

Phe Lys Gly Ala Leu Leu Pro Gly Thr Leu Leu Val Leu Ser Ala Met  
385 390 395 400

Cys Leu Gly Val Ala Lys Asp Arg Thr Gln Val Arg Pro Ser Phe Ser  
405 410 415

Trp Gln Leu Leu Val His Ala Val Arg Gly Ser Val Phe Asp Leu Ala  
420 425 430

Leu Pro Val Cys Ile Ser Leu Gly Tyr Phe Ser Gly Thr Leu Asn Leu  
435 440 445

Leu Gln Cys Ala Ser Leu Thr Thr Leu Leu Ala Phe Val Leu Gly Thr  
450 455 460

Trp Val Arg Arg Asp Phe Thr Val Lys Glu Ala Cys Ala Thr Ala Leu  
465 470 475 480

Glu Ser Leu Pro Ile Val Gly Gly Ile Leu Ile Ile Val Ala Ala Ala  
485 490 495

Lys Gly Leu Ser Phe Tyr Leu Val Asp Ala Asn Val Pro Asp Thr Leu  
500 505 510

Ile Ala Phe Leu Gln His Ala Ile Ser Ser Lys Tyr Ala Phe Leu Leu  
515 520 525

Leu Leu Asn Val Leu Leu Leu Gly Val Gly Cys Ile Met Asp Leu Tyr  
530 535 540

Ser Ala Ile Leu Val Ile Ser Pro Leu Val Leu Pro Leu Ala Val His  
545 550 555 560

Phe Gly Val His Pro Val His Ala Ser Val Val Phe Leu Met Asn Leu  
565 570 575

Glu Leu Gly Ala Leu Thr Pro Pro Ile Gly Met Asn Leu Phe Ile Ala  
580 585 590

Ser Phe Ala Phe Glu Lys Pro Ile Val Tyr Leu Thr Arg Ala Ile Ala  
595 600 605

Pro Phe Leu Leu Ala Gln Leu Gly Val Leu Leu Leu Thr Thr Tyr Ile  
610 615 620

Pro Trp Leu Ser Thr Ala Phe Leu  
625 630

<210> 26  
<211> 653  
<212> PRT  
<213> Vibrio cholerae

<220>  
<221> misc\_feature  
<223> iron(III) ABC transporter, permease protein

<220>  
<221> misc\_feature  
<223> gi|9654609

<400> 26

Met Ser Val Leu Arg Leu Thr Gly Leu Gly Ala Leu Thr Leu Leu Leu  
1 5 10 15

Ala Leu Val Ser Leu Gln Trp Gly His Asn Leu Thr Leu Asn Glu Gln  
20 25 30

Trp Gln Leu Val Leu Gly His Gln Ala Ala Gln Ser Phe Ala Gln Val  
35 40 45

Asn Phe Ile Tyr Ala Gln Leu Pro Arg Ala Val Met Ala Ile Val Val  
50 55 60

Gly Ala Val Leu Gly Leu Val Gly Ser Leu Met Gln Gln Leu Thr Gln  
65 70 75 80

Asn Arg Leu Thr Ser Pro Leu Thr Leu Gly Thr Ser Ser Gly Ala Trp  
85 90 95

Leu Gly Leu Ile Ile Val Asn Ile Trp Phe Ser Asp Trp Val Ala Asp  
100 105 110

Tyr Ser Ala Leu Ala Ala Met Ala Gly Ala Leu Leu Ala Phe Ala Leu  
115 120 125

Ile Ile Ser Ile Ala Gly Leu Arg Asn Leu Thr Gly Leu Pro Leu Val  
130 135 140

Val Ser Gly Met Val Val Asn Ile Leu Leu Gly Ser Ile Ala Thr Ala  
145 150 155 160

Leu Val Leu Leu Asn Glu Glu Phe Ala Gln Asn Val Phe Met Trp Gly  
165 170 175

Ala Gly Asp Leu Ala Gln Asn Gly Trp Glu Trp Leu Thr Trp Leu Leu  
180 185 190

Pro Arg Leu Ala Leu Val Phe Pro Leu Leu Leu Phe Ala Pro Arg Val  
195 200 205

Leu Thr Leu Leu Arg Leu Gly His Glu Gly Ala Ala Ala Arg Gly Leu  
210 215 220

Ala Val Leu Pro Ala Phe Leu Phe Leu Met Ala Gly Gly Ile Trp Leu  
225 230 235 240

Val Ser Ala Ser Ile Thr Ala Val Gly Val Ile Gly Phe Ile Gly Leu  
245 250 255

Leu Thr Pro Asn Ile Ala Arg Ser Leu Gly Ala Arg Thr Thr Lys Met  
260 265 270

Glu Leu Tyr Ser Ser Ala Leu Leu Gly Ala Leu Leu Leu Leu Ala Thr  
275 280 285

Asp Met Leu Ala Met Gly Leu Ser Val Trp Ala Glu Glu Val Val Pro  
290 295 300

Ser Gly Ile Thr Ala Ala Val Ile Gly Ala Pro Ala Leu Ile Trp Phe  
305 310 315 320

Ser Arg Arg Gln Leu Gln Ala Gln Asp Ser Leu Ser Ile Ser Leu Ser  
325 330 335

Ser His Arg Arg Ser Pro Ser Arg Trp Ala Val Met Leu Ile Ala Ala  
340 345 350

Ala Leu Leu Leu Ala Leu Ser Leu His Ile Gly Trp Gln Met Glu Ser  
355 360 365

[illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible]

<211> 356  
<212> PRT  
<213> Vibrio cholerae

<220>  
<221> misc\_feature  
<223> tolA protein

<220>  
<221> misc\_feature  
<223> gi|9656364

<400> 27

Met Lys Glu Asn Lys Ser Arg Lys Ser Asn Asp Ala Lys Ser Ile Thr  
1 5 10 15

Ile Ser Leu Ala Met His Gly Ala Leu Val Ala Ile Leu Leu Trp Gly  
20 25 30

Ala Asp Phe Thr Met Ser Asp Pro Glu Pro Thr Gly Gln Met Ile Glu  
35 40 45

Ala Val Val Ile Asp Pro Gln Leu Val Arg Gln Gln Ala Gln Gln Ile  
50 55 60

Arg Ser Gln Arg Glu Glu Ala Ala Lys Lys Glu Gln Glu Arg Leu Asp  
65 70 75 80

Lys Leu Arg Arg Glu Ser Glu Gln Leu Glu Lys Asn Arg Gln Ala Glu  
85 90 95

Glu Glu Arg Ile Arg Gln Leu Lys Glu Gln Gln Ala Lys Glu Ala Lys  
100 105 110

Ala Ala Arg Glu Ala Glu Lys Leu Arg Glu Gln Lys Glu Gln Glu Arg  
115 120 125

Leu Ala Ala Glu Gln Lys Ala Arg Glu Glu Lys Glu Arg Ala Ala Lys  
130 135 140

Ala Glu Ala Glu Arg Lys Val Lys Glu Glu Ala Ala Lys Lys Ala Glu  
145 150 155 160

Gln Glu Arg Val Ala Lys Glu Ala Ala Ala Lys Ala Glu Gln Gln  
165 170 175

Arg Ile Glu Arg Glu Lys Glu Ala Lys Leu Ala Glu Glu Lys Ala Lys  
180 185 190

Arg Glu Lys Glu Val Ala Ala Lys Ala Glu Gln Glu Arg Leu Ala Lys  
195 200 205

Glu Lys Ala Ala Lys Glu Ala Ala Asp Lys Ala Lys Lys Glu Lys Glu  
210 215 220

Arg Ala Ala Lys Ala Glu Ala Glu Arg Lys Ala Gln Glu Ala Ala Leu  
225 230 235 240

Asn Asp Ile Phe Gly Ser Leu Ser Glu Glu Ser Gln Gln Asn Asn Ala  
245 250 255

Ala Arg Gln Gln Phe Val Thr Ser Glu Val Gly Arg Tyr Gly Ala Ile  
260 265 270

Tyr Thr Gln Leu Ile Arg Gln Asn Leu Leu Val Glu Asp Ser Phe Arg  
275 280 285

Gly Lys Gln Cys Arg Val Asn Leu Lys Leu Ile Pro Thr Gly Thr Gly  
290 295 300

Ala Leu Leu Gly Ser Leu Thr Val Leu Asp Gly Asp Ser Arg Leu Cys  
305 310 315 320

Ala Ala Thr Lys Arg Ala Val Ala Gln Val Asn Ser Phe Pro Leu Pro  
325 330 335

Lys Asp Gln Pro Asp Val Val Glu Lys Leu Lys Asn Ile Asn Leu Thr  
340 345 350

Val Ala Pro Glu  
355

<210> 28

<211> 73

<212> PRT

<213> L. major

<220>

<221> misc\_feature

<223> hydrophilic surface protein 2

<220>

<221> misc\_feature

<223> gi|1743289

<400> 28

Met Gly Ser Ser Cys Thr Lys Asp Ser Ala Lys Glu Pro Gln Lys Ser  
1 5 10 15

Ala Gly Asn Ile Asp Thr Thr Thr Arg Ser Asp Glu Lys Asp Gly Val  
20 25 30

Leu Val Gln Gln Asn Asp Gly Asp Val Gln Lys Lys Ser Glu Asp Gly  
35 40 45



Asp Asn Val Gly Glu Gly Gly Lys Gly Asn Glu Asp Gly Asn Asp Asp  
50 55 60

Gln Pro Lys Glu His Ala Ala Gly Asn  
65 70

<210> 29  
<211> 177  
<212> PRT  
<213> L. major

<220>  
<221> misc\_feature  
<223> hydrophilic surface protein

<220>  
<221> misc\_feature  
<223> gi|468328

<400> 29

Met Gly Ser Ser Cys Thr Lys Asp Ser Ala Lys Glu Pro Gln Lys Ser  
1 5 10 15

Ala Asp Lys Ile Lys Ser Thr Asn Glu Thr Asn Gln Gly Gly Asn Ala  
20 25 30

Ser Gly Ser Arg Lys Ser Ala Gly Gly Arg Ala Asn Glu Tyr Asp Pro  
35 40 45

Lys Asp Asp Gly Phe Thr Pro Asn Asn Glu Asp Arg Cys Pro Lys Glu  
50 55 60

Asp Gly His Ala Pro Lys Asn Asp Asp His Ala Pro Lys Glu Asp Gly  
65 70 75 80

His Ala Pro Lys Asn Asp Asp His Ala Pro Lys Glu Asp Gly His Ala  
85 90 95

Pro Lys Asn Asp Asp His Ala Pro Lys Glu Asp Gly His Ala Pro Lys  
100 105 110

Asn Asp Asp His Ala Pro Lys Glu Asp Gly His Ala Pro Lys Asn Asp  
115 120 125

Asp His Ala Pro Lys Glu Asp Gly His Ala Pro Lys Asn Asp Gly Asp  
130 135 140

Val Gln Lys Lys Ser Glu Asp Gly Asp Asn Val Gly Glu Gly Gly Lys  
145 150 155 160

Gly Asn Glu Asp Gly Asn Asp Asp Gln Pro Lys Glu His Ala Ala Gly

165

170

175

Asn

<210> 30  
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 <212> PRT  
 <213> Plasmodium falciparum

<220>  
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 <223> predicted integral membrane protein

<220>  
 <221> misc\_feature  
 <223> gi|3845179

<400> 30

Met Tyr Ile Cys Phe Phe Phe Phe Phe Phe Phe Leu Val Ile Lys Leu  
 1 5 10 15  
 Gly Glu Asp Glu Asn Phe Gly Ser Ser Cys Phe Tyr Ser Leu Gly Asn  
 20 25 30  
 Thr Lys Ile Leu Thr Thr Val Tyr Gly Pro Asn Pro Asp Ser Lys Tyr  
 35 40 45  
 Ala Thr Tyr Ser Lys Gly Lys Val Phe Leu Asp Val Lys Ser Leu Asn  
 50 55 60  
 Ile Asn Thr Ile Gly Ala Ser Asp Arg Val Leu Tyr Ile Tyr Gly Phe  
 65 70 75 80  
 Phe Phe Phe Phe Phe Phe Phe Phe Phe Phe Ile Leu Asn Arg Ser Tyr  
 85 90 95  
 Phe Phe Leu Val Leu Phe Ile Ile Phe Ile  
 100 105

<210> 31  
 <211> 396  
 <212> PRT  
 <213> Plasmodium falciparum

<220>  
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 <223> Circumsporozoite (CS) protein

<220>  
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<223> gi|4493889

<400> 31

Met Arg Lys Leu Ala Ile Leu Ser Val Ser Ser Phe Leu Phe Val Glu  
1 5 10 15  
Ala Leu Phe Gln Glu Tyr Gln Cys Tyr Gly Ser Ser Ser Asn Thr Arg  
20 25 30  
Val Leu Asn Glu Leu Asn Tyr Asp Asn Ala Gly Thr Asn Leu Tyr Asn  
35 40 45  
Glu Leu Glu Met Asn Tyr Tyr Gly Lys Gln Glu Asn Trp Tyr Ser Leu  
50 55 60  
Lys Lys Asn Ser Arg Ser Leu Gly Glu Asn Asp Asp Gly Asn Asn Glu  
65 70 75 80  
Asp Asn Glu Lys Leu Arg Lys Pro Lys His Lys Lys Leu Lys Gln Pro  
85 90 95  
Ala Asp Gly Asn Pro Asp Pro Asn Ala Asn Pro Asn Val Asp Pro Asn  
100 105 110  
Ala Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Asn Val Asp Pro Asn  
115 120 125  
Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn  
130 135 140  
Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn  
145 150 155 160  
Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn  
165 170 175  
Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn  
180 185 190  
Ala Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn  
195 200 205  
Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn  
210 215 220  
Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn  
225 230 235 240  
Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn  
245 250 255  
Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asn  
260 265 270

Lys Asn Asn Gln Gly Asn Gly Gln Gly His Asn Met Pro Asn Asp Pro  
275 280 285

Asn Arg Asn Val Asp Glu Asn Ala Asn Ala Asn Ser Ala Val Lys Asn  
290 295 300

Asn Asn Asn Glu Glu Pro Ser Asp Lys His Ile Lys Glu Tyr Leu Asn  
305 310 315 320

Lys Ile Gln Asn Ser Leu Ser Thr Glu Trp Ser Pro Cys Ser Val Thr  
325 330 335

Cys Gly Asn Gly Ile Gln Val Arg Ile Lys Pro Gly Ser Ala Asn Lys  
340 345 350

Pro Lys Asp Glu Leu Asp Tyr Ala Asn Asp Ile Glu Lys Lys Ile Cys  
355 360 365

Lys Met Glu Lys Cys Ser Ser Val Phe Asn Val Val Asn Ser Ser Ile  
370 375 380

Gly Leu Ile Met Val Leu Ser Phe Leu Phe Leu Asn  
385 390 395

<210> 32

<211> 497

<212> PRT

<213> B. burgdorferi

<220>

<221> misc\_feature

<223> predicted coding region BB0553

<220>

<221> misc\_feature

<223> gi|2688482

<400> 32

Met Asn Lys Thr Lys Asn Arg Ser Leu Thr Tyr Phe Ile Ile Leu Ser  
1 5 10 15

Cys Ile Ser Leu Phe Gly Ala Asn Asn Asn Thr Ile Ser Tyr Ser Ser  
20 25 30

Ile Glu Ile Pro Leu Glu Asp Leu Ser Glu Glu Phe Lys Ser Ser Gly  
35 40 45

Asn Lys Ser Asp Gln Ile Asn Thr Ser Lys His Leu Asn Lys Asn Ile  
50 55 60

Val Ser Tyr Glu Asp Pro Lys Lys Gly Lys Asp Leu Lys Leu Pro Glu

65		70		75		80
Asn Ile Arg Asp Lys Lys Leu Pro Gln Lys Arg Met Asp Glu Asn Asp						
	85			90		95
Leu Lys Ser Val Ile Glu Asn Tyr Glu Asn Lys Ile Lys Asn Ile Glu						
	100			105		110
Lys Leu Leu Lys Thr Lys Asn Gln Lys Thr Ser Glu Asn Glu Asn Lys						
	115			120		125
Lys Ile Glu Ser Ile Glu Lys Lys Ala Lys Lys Tyr Glu Ile Leu Thr						
	130			135		140
Asn Lys Leu Lys Asn Glu Ile Val Glu Ile Lys Lys Leu Leu Asn Lys						
	145			150		155
Lys Ile Lys Pro Lys Glu Asp Glu Asn Tyr Glu Lys Ile Asn Ile Glu						
	165			170		175
Asn Ile Glu Glu Glu Thr Asp Asp Asp Phe Glu Asp Asn Tyr Glu Tyr						
	180			185		190
Asn Asp Glu Ile Glu Xaa Thr Asn Glu Asp Asn Tyr Pro Ser Asn Glu						
	195			200		205
Gly Ile Ile Asn Asn Leu Lys Glu Asn Leu Asn Glu Asn Glu Lys Tyr						
	210			215		220
Tyr Ala Ile Asn Glu Lys Lys Ile Asp Glu Leu Glu Asp Arg Ile Asn						
	225			230		235
Glu Asn Glu Asn Thr Ile Leu Asp Leu Gln Arg Glu Leu Arg Asn Phe						
	245			250		255
Lys Lys Lys Asp Asn Ser Asp Lys Asn Leu Glu Glu Ile Glu Glu Asn						
	260			265		270
Leu Ser Ser Ile Gly Arg Ile Ile Asn Asp Leu Lys Arg Lys Ile Ser						
	275			280		285
Ala Asn Glu Ala Ile Asn Lys Glu Asn Gln Lys Lys Ile Arg Thr Asp						
	290			295		300
Lys His Lys Leu Lys Glu Leu Glu Asp Lys Ile Lys Glu Asn Glu Glu						
	305			310		315
Thr Ile Leu Lys Leu Gln Lys Glu Leu Asn Asn Phe Lys Lys Lys Glu						
	325			330		335
Ile Tyr Gln Lys Pro Leu Asn Glu Glu Thr Phe Thr Pro Ser Ile Thr						
	340			345		350
Ser Lys Asn Asp Asp Leu Glu Glu Asn Lys Lys Leu Lys Lys Glu Tyr						
	355			360		365

Leu Lys Pro Ile Glu Lys Lys Glu Ser Arg Asp Leu Glu Glu Asn Thr  
370 375 380

Lys Ser Thr Pro Lys Thr Thr Met Ile Lys Thr Ala Asp Phe Gln Ile  
385 390 395 400

Tyr Pro Asp Ile Tyr Leu Asn Asn Tyr Lys Phe Lys Glu Lys Gly Asp  
405 410 415

Gln Phe Ala Phe Lys Lys Glu Asn Thr Tyr Tyr Ile Glu Ile Asp Pro  
420 425 430

Thr Asn Asn Leu Asn Glu Ala Leu Lys Asn His Glu Ile Ile Ser Lys  
435 440 445

Tyr Lys Phe Glu Lys Tyr Phe Ile Asn Pro Ile Leu Lys Asn Lys Glu  
450 455 460

Glu Phe Phe Arg Asn Leu Ile Glu Val Lys Asn Ile His Glu Leu Gly  
465 470 475 480

Ile Met Tyr Lys Asn Leu Lys Pro Glu Phe Lys Gln Ile Lys Ile Ile  
485 490 495

Lys

<210> 33

<211> 31

<212> PRT

<213> B. burgdorferi

<220>

<221> misc\_feature

<223> predicted coding region BB0148

<220>

<221> misc\_feature

<223> gi|2688046

<400> 33

Met Pro Val Lys Lys Asn Ser Thr Lys Ile Lys Lys Lys Glu Thr Gln  
1 5 10 15

Ile Ala Ile Ala Leu Lys Ile Ile Ile Ile Ile Tyr Phe Phe Asp  
20 25 30

<210> 34

<211> 30

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<213> B. burgdorferi

<220>  
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<400> 34

Met Phe Gly Cys Leu Arg Ile His Val Phe Lys Ile Tyr Phe Ile Phe  
1 5 10 15  
Leu Ile Ile His Tyr Ile Leu Phe Ser Ile Leu Leu Met Ile  
20 25 30

<210> 35  
<211> 344  
<212> PRT  
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<220>  
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<223> predicted coding region BB0212

<220>  
<221> misc\_feature  
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<400> 35

Met Met Lys Lys Ile Lys Ser Glu Ile Asn Leu Leu Lys Ile Glu Lys  
1 5 10 15  
Asp Lys Asn Leu Ile Glu Leu Gly Lys Ile Leu Lys Asn Asn Asn Ile  
20 25 30  
Val Glu Leu Lys Asn Leu Asn His Tyr Pro Asn Leu Lys Leu Val Glu  
35 40 45  
Lys Glu Leu Tyr Gln Met Lys Ser Asn Leu Ser Lys Ser Glu Glu Asn  
50 55 60  
Glu Asn Ile Leu Lys Asn Leu Asn Lys Lys Ile Tyr Ile Leu Lys Lys  
65 70 75 80  
Glu Tyr Lys Ser Thr Ser Lys Ser Tyr Lys Lys Asn Leu Lys Glu Ile  
85 90 95  
Ala Lys Thr Ile Ile Glu Ile Tyr Pro Gln Asn Leu Glu Leu Ile Ser

100	105	110
Lys Tyr Asn Met Asn Phe Ser Lys Leu Lys Leu Glu Lys Tyr Lys Lys 115 120 125		
Ile Glu Leu Ala Ser Asp His Lys Thr Lys Asn Tyr Leu Gln Arg Ile 130 135 140		
Met Leu Glu Val Ser Ser Thr Ile Asn Asn Ile Ile Asn Met Ile Asn 145 150 155 160		
Val Tyr Lys Ile Ser Lys Glu Phe Glu Lys Gln Val Phe Thr Lys Tyr 165 170 175		
Tyr Pro Ser Glu Asn Phe Glu Ser Ile Met Asn Glu Phe Ser Leu Asn 180 185 190		
Lys Lys Leu Asn Asn Val Ile Val Lys Glu Phe Lys Ile Ile Asn Glu 195 200 205		
Ile Lys Thr Asn Ile Lys Asn Ile Lys Glu Glu Ile Lys Glu Ile Ile 210 215 220		
Ser Thr Ser Lys Lys Glu Lys Ile Tyr Lys Lys Asn Thr Ile Lys Asn 225 230 235 240		
Glu Ile Asn Val Ile Thr Lys Asn Lys Glu Asn Ile Leu Lys Lys Ile 245 250 255		
Ala Glu Glu Phe Ile Glu Ile Thr Lys Lys Asp Lys Met Thr Ala Lys 260 265 270		
Thr Asn Ala Ile Ser Ser Ile Ile Gln Lys Ile Glu Lys Ile Asn Gln 275 280 285		
Lys Ile Leu Asn Leu Asn Asn Asp Leu Ile Lys Ile Thr Lys Gln Glu 290 295 300		
Glu Ile Lys Asn Ile Gln Gln Lys Ile Gln Ala Leu Thr Lys Glu Lys 305 310 315 320		
Asn Lys Ile Asn Asn Lys Leu Asp Ala Leu Thr Ser Lys Ile Glu Val 325 330 335		
Ile Gln Asn Glu Leu Asp Asn Glu 340		

<210> 36  
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 <223> predicted coding region BB0425



<220>  
<221> misc\_feature  
<223> gi|2688333

<400> 36

Met Glu Asp Glu Arg Arg Glu Glu Leu Ser Lys Val Lys Ser Gln Lys  
1 5 10 15

Asn Lys Gln Asn Leu Leu Ile Phe Leu Asn Lys Lys Ile Lys  
20 25 30

<210> 37  
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<223> predicted coding region BB0433

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<223> gi|2688343

<400> 37

Met His Lys Phe Phe Lys Leu Ile Leu Lys Leu Phe Ser Phe Tyr Lys  
1 5 10 15

Glu Ile Leu Gly Phe Lys Arg Arg Ala Lys Phe Ile Phe Cys Tyr Leu  
20 25 30

<210> 38  
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<220>  
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<223> predicted coding region BB0520

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<400> 38

Met Ser Lys Ser Thr Lys Asn Thr Thr Lys Ser Lys Asn Asp Thr Lys  
1 5 10 15

Asn Ile Leu Ile Asn Lys Lys Ile Lys Phe Phe Ile Leu Thr Lys Lys  
20 25 30

Tyr Thr Arg Thr Phe Tyr  
35

<210> 39  
<211> 36  
<212> PRT  
<213> B. burgdorferi

<220>  
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<223> predicted coding region BB0609

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<223> gi|2688540

<400> 39

Met Thr Met Ile Ile Ile Ile Phe Tyr Lys Tyr Leu Ile Pro Lys Ser  
1 5 10 15

Ile Lys Asp Lys Asn Asn Lys Ser His Lys Thr Phe Ile Lys Lys Phe  
20 25 30

Ile Ile Lys Tyr  
35

<210> 40  
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<223> predicted coding region BB0822

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<223> gi|2688768

<400> 40

Met Pro Cys Gly Arg Lys Arg Lys Leu Lys Lys Ile Ser Thr His Lys  
1 5 10 15

Arg Lys Lys Lys Arg Arg Lys Asn Arg His Lys Lys Lys Asn Lys  
 20 25 30

<210> 41  
 <211> 34  
 <212> PRT  
 <213> B. burgdorferi

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 <221> misc\_feature  
 <223> predicted coding region BB0848

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 <223> gi|2688793

<400> 41

Met Tyr Phe Cys Ile Ile Asp Leu Glu Phe Val Gly Val Leu Pro Tyr  
 1 5 10 15

Phe Phe Ile Tyr Lys Phe Gly Glu Phe Tyr Phe Ser Phe Phe Gly Lys  
 20 25 30

Trp Arg

<210> 42  
 <211> 51  
 <212> PRT  
 <213> C. jejuni

<220>  
 <221> misc\_feature  
 <223> highly acidic protein

<220>  
 <221> misc\_feature  
 <223> gi|6967728

<400> 42

Met Ala Tyr Glu Asp Glu Glu Asp Leu Asn Tyr Asp Asp Tyr Glu Asn  
 1 5 10 15

Glu Asp Glu Glu Tyr Pro Gln Asn His His Lys Asn Tyr Asn Tyr Asp  
 20 25 30

Asp Asp Asp Tyr Glu Tyr Asp Asp Asp Asn Asn Asp Asp Asp Phe Tyr  
 35 40 45

Glu Met Asp  
50

<210> 43  
<211> 41  
<212> PRT  
<213> C. jejuni

<220>  
<221> misc\_feature  
<223> hypothetical protein Cj0344

<220>  
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<223> gi|6967819

<400> 43

Met Phe Gln Asn Ile Ile Lys Tyr Lys Asp Phe Ile Ile Phe Ile Leu  
1 5 10 15

Asn Leu Lys Gln Asn Leu Tyr Leu Leu Ile Lys Ile Asn Leu Asp Phe  
20 25 30

Lys Asn Phe His Lys Ser Leu Asn Phe  
35 40

<210> 44  
<211> 37  
<212> PRT  
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<220>  
<221> misc\_feature  
<223> hypothetical protein Cj0567

<220>  
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<223> gi|6968034

<400> 44

Met Asp Lys Ile Gln Glu Asn Thr Lys Ile Glu Lys Ala Ile Leu Ala  
1 5 10 15

Glu Lys Gln Gln Ile Phe Leu Ile Gln Asn Lys Leu Ser Glu Ile Glu  
20 25 30

Lys Asn Ile Lys Glu  
35

<210> 45  
 <211> 74  
 <212> PRT  
 <213> C. jejuni  
  
 <220>  
 <221> misc\_feature  
 <223> small hydrophobic protein

<220>  
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 <223> gi|6968265

<400> 45

Met Leu Glu Phe Ile Phe Thr Leu Ile Leu Asp Phe Thr Phe Tyr Ser  
 1 5 10 15  
  
 Ile Lys Thr Leu Glu Lys Val Phe Leu Gly Arg Thr Ala Leu Val Ile  
 20 25 30  
  
 Leu Phe Val Val Phe Ile Ala Leu Phe Cys Val Lys Gly Leu Phe Leu  
 35 40 45  
  
 Tyr Ile Leu Leu Ala Leu Glu Leu Phe Leu Leu Leu Tyr Leu Phe Leu  
 50 55 60  
  
 Gly Ile Leu Phe Leu Arg Phe Tyr Lys Ser  
 65 70

<210> 46  
 <211> 46  
 <212> PRT  
 <213> C. jejuni

<220>  
 <221> misc\_feature  
 <223> very hypothetical protein Cj0974

<220>  
 <221> misc\_feature  
 <223> gi|6968409

<400> 46

Met Leu Lys Met Ile Lys Ile Gln Lys Val Lys Ser Leu Leu Asp Leu  
 1 5 10 15  
  
 Val Lys Lys Leu Lys Asn Lys Gln Ser Leu Lys Ile Lys Asn Gln Thr  
 20 25 30

Asn Thr Lys Glu Asn Leu Asn Lys Thr His Tyr Leu Thr Ile  
35 40 45

<210> 47  
<211> 78  
<212> PRT  
<213> C. jejuni

<220>  
<221> misc\_feature  
<223> very hypothetical protein

<220>  
<221> misc\_feature  
<223> gi|6968423

<400> 47

Met Leu Lys Ile Pro Tyr Phe Ser Phe Leu Lys Leu Asp Phe Glu Ile  
1 5 10 15  
Tyr His Leu Asn Thr Ser Lys Asn Phe Tyr Gly Phe Phe Ile Leu Tyr  
20 25 30  
Phe Ser Phe Phe Ile Phe Lys Leu Ile Tyr Lys Phe Ser Lys Ser Asn  
35 40 45  
Lys Lys Ile Tyr Lys Lys Ile Ile Lys Leu Lys Lys Ile Ile Lys Asp  
50 55 60  
Asn Lys Tyr Leu Ile Phe Leu Cys Tyr Ile Leu Ile Asn Ile  
65 70 75

<210> 48  
<211> 30  
<212> PRT  
<213> C. jejuni

<220>  
<221> misc\_feature  
<223> hypothetical protein Cj0748

<220>  
<221> misc\_feature  
<223> gi|6968200

<400> 48

Met Leu Glu Thr Leu Lys Lys Tyr Ala Glu Asn Gln Gly Ile Glu Asp  
1 5 10 15

Asn Tyr Pro Lys Lys Ile Tyr Asn Gln Lys Glu Lys Lys Pro  
20 25 30

<210> 49  
<211> 168  
<212> PRT  
<213> C. pneumoniae CWL029

<220>  
<221> misc\_feature  
<223> CT670 hypothetical protein

<220>  
<221> misc\_feature  
<223> gi|4377009

<400> 49

Met Ala Lys Tyr Pro Leu Glu Pro Val Leu Ala Ile Lys Lys Asp Arg  
1 5 10 15  
Val Asp Arg Ala Glu Lys Val Val Lys Glu Lys Arg Arg Leu Leu Glu  
20 25 30  
Ile Glu Gln Glu Lys Leu Arg Glu Lys Glu Ala Glu Arg Asp Lys Val  
35 40 45  
Lys Asn His Tyr Met Gln Lys Ile Gln Gln Leu Arg Asp Leu Leu Asp  
50 55 60  
Glu Gly Thr Thr Ser Asp Ala Val Leu Gln Ile Lys Ser Tyr Ile Lys  
65 70 75 80  
Val Val Ala Val Gln Leu Ser Glu Glu Glu Lys Val Asn Lys Gln  
85 90 95  
Lys Glu Val Val Leu Ala Ala Ser Lys Glu Leu Glu Lys Ala Glu Val  
100 105 110  
Asn Leu Ala Lys Arg Arg Lys Glu Glu Glu Lys Thr Arg Leu His Lys  
115 120 125  
Glu Glu Trp Met Lys Glu Ala Leu Lys Glu Glu Ala Arg Ala Glu Glu  
130 135 140  
Lys Glu Gln Asp Glu Met Gly Gln Leu Leu Phe Gln Leu Arg Gln Lys  
145 150 155 160  
Lys Lys Arg Glu Ser Gly Gly Ser  
165

<210> 50  
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<212> PRT  
<213> C. pneumoniae CWL029

<220>  
<221> misc\_feature  
<223> CT579 hypothetical protein

<220>  
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<223> gi|4377120

<400> 50

Met Thr Ser Gly Val Ser Gly Ser Ser Ser Gln Asp Pro Thr Leu Ala  
1 5 10 15

Ala Gln Leu Ala Gln Ser Ser Gln Lys Ala Gly Asn Ala Gln Ser Gly  
20 25 30

His Asp Thr Lys Asn Val Thr Lys Gln Gly Ala Gln Ala Glu Val Ala  
35 40 45

Ala Gly Gly Phe Glu Asp Leu Ile Gln Asp Ala Ser Ala Gln Ser Thr  
50 55 60

Gly Lys Lys Glu Ala Thr Ser Ser Thr Thr Lys Ser Ser Lys Gly Glu  
65 70 75 80

Lys Ser Glu Lys Ser Gly Lys Ser Lys Ser Ser Thr Ser Val Ala Ser  
85 90 95

Ala Ser Glu Thr Ala Thr Ala Gln Ala Val Gln Gly Pro Lys Gly Leu  
100 105 110

Arg Gln Asn Asn Tyr Asp Ser Pro Ser Leu Pro Thr Pro Glu Ala Gln  
115 120 125

Thr Ile Asn Gly Ile Val Leu Lys Lys Gly Met Gly Thr Leu Ala Leu  
130 135 140

Leu Gly Leu Val Met Thr Leu Met Ala Asn Ala Ala Gly Glu Ser Trp  
145 150 155 160

Lys Ala Ser Phe Gln Ser Gln Asn Gln Ala Ile Arg Ser Gln Val Glu  
165 170 175

Ser Ala Pro Ala Ile Gly Glu Ala Ile Lys Arg Gln Ala Asn His Gln  
180 185 190

Ala Ser Ala Thr Glu Ala Gln Ala Lys Gln Ser Leu Ile Ser Gly Ile  
195 200 205

Val Asn Ile Val Gly Phe Thr Val Ser Val Gly Ala Gly Ile Phe Ser



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210	215	220
Ala Ala Lys Gly Ala Thr Ser Ala Leu Lys Ser Ala Ser Phe Ala Lys		
225	230	235 240
Glu Thr Gly Ala Ser Ala Ala Gly Gly Ala Ala Ser Lys Ala Leu Thr		
	245	250 255
Ser Ala Ser Ser Ser Val Gln Gln Thr Met Ala Ser Thr Ala Lys Ala		
	260	265 270
Ala Thr Thr Ala Ala Ser Ser Ala Gly Ser Ala Ala Thr Lys Ala Ala		
	275	280 285
Ala Asn Leu Thr Asp Asp Met Ala Ala Ala Ala Ser Lys Met Ala Ser		
	290	295 300
Asp Gly Ala Ser Lys Ala Ser Gly Gly Leu Phe Gly Glu Val Leu Asn		
305	310	315 320
Lys Pro Asn Trp Ser Glu Lys Val Ser Arg Gly Met Asn Val Val Lys		
	325	330 335
Thr Gln Gly Ala Arg Val Ala Ser Phe Ala Gly Asn Ala Leu Ser Ser		
	340	345 350
Ser Met Gln Met Ser Gln Leu Met His Gly Leu Thr Ala Ala Val Glu		
	355	360 365
Gly Leu Ser Ala Gly Gln Thr Gly Ile Glu Val Ala His His Gln Arg		
	370	375 380
Leu Ala Gly Gln Ala Glu Ala Gln Ala Glu Val Leu Lys Gln Met Ser		
385	390	395 400
Ser Val Tyr Gly Gln Gln Ala Gly Gln Ala Gly Gln Leu Gln Glu Gln		
	405	410 415
Ala Met Gln Ser Phe Asn Thr Ala Leu Gln Thr Leu Gln Asn Ile Ala		
	420	425 430
Asp Ser Gln Thr Gln Thr Thr Ser Ala Ile Phe Asn		
	435	440

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Met Ser Ile Ser Ser Ser Ser Gly Pro Asp Asn Gln Lys Asn Ile Met  
1 5 10 15

Ser Gln Val Leu Thr Ser Thr Pro Gln Gly Val Pro Gln Gln Asp Lys  
20 25 30

Leu Ser Gly Asn Glu Thr Lys Gln Ile Gln Gln Thr Arg Gln Gly Lys  
35 40 45

Asn Thr Glu Met Glu Ser Asp Ala Thr Ile Ala Gly Ala Ser Gly Lys  
50 55 60

Asp Lys Thr Ser Ser Thr Thr Lys Thr Glu Thr Ala Pro Gln Gln Gly  
65 70 75 80

Val Ala Ala Gly Lys Glu Ser Ser Glu Ser Gln Lys Ala Gly Ala Asp  
85 90 95

Thr Gly Val Ser Gly Ala Ala Ala Thr Thr Ala Ser Asn Thr Ala Thr  
100 105 110

Lys Ile Ala Met Gln Thr Ser Ile Glu Glu Ala Ser Lys Ser Met Glu  
115 120 125

Ser Thr Leu Glu Ser Leu Gln Ser Leu Ser Ala Ala Gln Met Lys Glu  
130 135 140

Val Glu Ala Val Val Val Ala Ala Leu Ser Gly Lys Ser Ser Gly Ser  
145 150 155 160

Ala Lys Leu Glu Thr Pro Glu Leu Pro Lys Pro Gly Val Thr Pro Arg  
165 170 175

Ser Glu Val Ile Glu Ile Gly Leu Ala Leu Ala Lys Ala Ile Gln Thr  
180 185 190

Leu Gly Glu Ala Thr Lys Ser Ala Leu Ser Asn Tyr Ala Ser Thr Gln  
195 200 205

Ala Gln Ala Asp Gln Thr Asn Lys Leu Gly Leu Glu Lys Gln Ala Ile  
210 215 220

Lys Ile Asp Lys Glu Arg Glu Glu Tyr Gln Glu Met Lys Ala Ala Glu  
225 230 235 240

Gln Lys Ser Lys Asp Leu Glu Gly Thr Met Asp Thr Val Asn Thr Val  
245 250 255

Met Ile Ala Val Ser Val Ala Ile Thr Val Ile Ser Ile Val Ala Ala

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260	265	270
Ile Phe Thr Cys Gly Ala Gly Leu Ala Gly Leu Ala Ala Gly Ala Ala		
275	280	285
Val Gly Ala Ala Ala Ala Gly Gly Ala Ala Gly Ala Ala Ala Ala Thr		
290	295	300
Thr Val Ala Thr Gln Ile Thr Val Gln Ala Val Val Gln Ala Val Lys		
305	310	315
Gln Ala Val Ile Thr Ala Val Arg Gln Ala Ile Thr Ala Ala Ile Lys		
	325	330
Ala Ala Val Lys Ser Gly Ile Lys Ala Phe Ile Lys Thr Leu Val Lys		
	340	345
Ala Ile Ala Lys Ala Ile Ser Lys Gly Ile Ser Lys Val Phe Ala Lys		
	355	360
Gly Thr Gln Met Ile Ala Lys Asn Phe Pro Lys Leu Ser Lys Val Ile		
	370	375
Ser Ser Leu Thr Ser Lys Trp Val Thr Val Gly Val Gly Val Val Val		
	385	390
Ala Ala Pro Ala Leu Gly Lys Gly Ile Met Gln Met Gln Leu Ser Glu		
	405	410
Met Gln Gln Asn Val Ala Gln Phe Gln Lys Glu Val Gly Lys Leu Gln		
	420	425
Ala Ala Ala Asp Met Ile Ser Met Phe Thr Gln Phe Trp Gln Gln Ala		
	435	440
Ser Lys Ile Ala Ser Lys Gln Thr Gly Glu Ser Asn Glu Met Thr Gln		
	450	455
Lys Ala Thr Lys Leu Gly Ala Gln Ile Leu Lys Ala Tyr Ala Ala Ile		
	465	470
Ser Gly Ala Ile Ala Gly Ala His Lys Thr Asn Asn Phe		
	485	490

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<223> gi|4377216

<400> 52

Met Arg Asn Met Glu Ala Lys Lys Ile Lys Glu Leu Ser Lys Glu Ala  
1 5 10 15

Gln Leu Leu Lys Lys Leu Arg Glu Lys Ser Arg Val Leu Asp Glu Lys  
20 25 30

Asn Lys Arg Lys Ala Trp Val Ala Lys Leu Val Ala Met Pro Glu Ser  
35 40 45

Ile Arg Glu Ile Glu Lys Glu Glu Arg Val Glu Thr Pro Gln Leu Phe  
50 55 60

Gln Ala Ile Ala Glu Lys Ile Leu Glu Glu Gly Val  
65 70 75

<210> 53

<211> 755

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<223> CT456 hypothetical protein

<220>

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<223> gi|4376866

<400> 53

Met Ala Ala Pro Ile Asn Gln Pro Ser Thr Thr Thr Gln Ile Thr Gln  
1 5 10 15

Thr Gly Gln Thr Thr Thr Thr Thr Thr Val Gly Ser Leu Gly Glu His  
20 25 30

Ser Val Thr Thr Thr Gly Ser Gly Ala Ala Ala Gln Thr Ser Gln Thr  
35 40 45

Val Thr Leu Ile Ala Asp His Glu Met Gln Glu Ile Ala Ser Gln Asp  
50 55 60

Gly Ser Ala Val Ser Phe Ser Ala Glu His Ser Phe Ser Thr Leu Pro  
65 70 75 80

Pro Glu Thr Gly Ser Val Gly Ala Thr Ala Gln Ser Ala Gln Ser Ala  
85 90 95

Gly Leu Phe Ser Leu Ser Gly Arg Thr Gln Arg Arg Asp Ser Glu Ile  
100 105 110

Ser Ser Ser Ser Asp Gly Ser Ser Ile Ser Arg Thr Ser Ser Asn Ala  
115 120 125

Ser Ser Gly Glu Thr Ser Arg Ala Glu Ser Ser Pro Asp Leu Gly Asp  
130 135 140

Leu Asp Ser Leu Ser Gly Ser Glu Arg Ala Glu Gly Ala Glu Gly Pro  
145 150 155 160

Glu Gly Pro Gly Gly Leu Pro Glu Ser Thr Ile Pro His Tyr Asp Pro  
165 170 175

Thr Asp Lys Ala Ser Ile Leu Asn Phe Leu Lys Asn Pro Ala Val Gln  
180 185 190

Gln Lys Met Gln Thr Lys Gly Gly His Phe Val Tyr Val Asp Glu Ala  
195 200 205

Arg Ser Ser Phe Ile Phe Val Arg Asn Gly Asp Trp Ser Thr Ala Glu  
210 215 220

Ser Ile Lys Val Ser Asn Ala Lys Thr Lys Glu Asn Ile Thr Lys Pro  
225 230 235 240

Ala Asp Leu Glu Met Cys Ile Ala Lys Phe Cys Val Gly Tyr Glu Thr  
245 250 255

Ile His Ser Asp Trp Thr Gly Arg Val Lys Pro Thr Met Glu Glu Arg  
260 265 270

Ser Gly Ala Thr Gly Asn Tyr Asn His Leu Met Leu Ser Met Lys Phe  
275 280 285

Lys Thr Ala Val Val Tyr Gly Pro Trp Asn Ala Lys Glu Ser Ser Ser  
290 295 300

Gly Tyr Thr Pro Ser Ala Trp Arg Arg Gly Ala Lys Val Glu Thr Gly  
305 310 315 320

Pro Ile Trp Asp Asp Val Gly Gly Leu Lys Gly Ile Asn Trp Lys Thr  
325 330 335

Thr Pro Ala Pro Asp Phe Ser Phe Ile Asn Glu Thr Pro Gly Gly Gly  
340 345 350

Ala His Ser Thr Ser His Thr Gly Pro Gly Thr Pro Val Gly Ala Thr  
355 360 365

Val Val Pro Asn Val Asn Val Asn Leu Gly Gly Ile Lys Val Asp Leu  
370 375 380

Gly	Gly	Ile	Asn	Leu	Gly	Gly	Ile	Thr	Thr	Asn	Val	Thr	Thr	Glu	Glu	385	390	395	400
Gly	Gly	Gly	Thr	Asn	Ile	Thr	Ser	Thr	Lys	Ser	Thr	Ser	Thr	Asp	Asp	405	410	415	
Lys	Val	Ser	Ile	Thr	Ser	Thr	Gly	Ser	Gln	Ser	Thr	Ile	Glu	Glu	Asp	420	425	430	
Thr	Ile	Gln	Phe	Asp	Asp	Pro	Gly	Gln	Gly	Glu	Asp	Asp	Asn	Ala	Ile	435	440	445	
Pro	Gly	Thr	Asn	Thr	Pro	Pro	Pro	Pro	Gly	Pro	Pro	Pro	Asn	Leu	Ser	450	455	460	
Ser	Ser	Arg	Leu	Leu	Thr	Ile	Ser	Asn	Ala	Ser	Leu	Asn	Gln	Val	Leu	465	470	475	480
Gln	Asn	Val	Arg	Gln	His	Leu	Asn	Thr	Ala	Tyr	Asp	Ser	Asn	Gly	Asn	485	490	495	
Ser	Val	Ser	Asp	Leu	Asn	Gln	Asp	Leu	Gly	Gln	Val	Val	Lys	Asn	Ser	500	505	510	
Glu	Asn	Gly	Val	Asn	Phe	Pro	Thr	Val	Ile	Leu	Pro	Lys	Thr	Thr	Gly	515	520	525	
Asp	Thr	Asp	Pro	Ser	Gly	Gln	Ala	Thr	Gly	Gly	Val	Thr	Glu	Gly	Gly	530	535	540	
Gly	His	Ile	Arg	Asn	Ile	Ile	Gln	Arg	Asn	Thr	Gln	Ser	Thr	Gly	Gln	545	550	555	560
Ser	Glu	Gly	Ala	Thr	Pro	Thr	Pro	Gln	Pro	Thr	Ile	Ala	Lys	Ile	Val	565	570	575	
Thr	Ser	Leu	Arg	Lys	Ala	Asn	Val	Ser	Ser	Ser	Ser	Val	Leu	Pro	Gln	580	585	590	
Pro	Gln	Val	Ala	Thr	Thr	Ile	Thr	Pro	Gln	Ala	Arg	Thr	Ala	Ser	Thr	595	600	605	
Ser	Thr	Thr	Ser	Ile	Gly	Thr	Gly	Thr	Glu	Ser	Thr	Ser	Thr	Thr	Ser	610	615	620	
Thr	Gly	Thr	Gly	Thr	Gly	Ser	Val	Ser	Thr	Gln	Ser	Thr	Gly	Val	Gly	625	630	635	640
Thr	Pro	Thr	Thr	Thr	Thr	Arg	Ser	Thr	Gly	Thr	Ser	Ala	Thr	Thr	Thr	645	650	655	
Thr	Ser	Ser	Ala	Ser	Thr	Gln	Thr	Pro	Gln	Ala	Pro	Leu	Pro	Ser	Gly	660	665	670	
Thr	Arg	His	Val	Ala	Thr	Ile	Ser	Leu	Val	Arg	Asn	Ala	Ala	Gly	Arg				

675                      680                      685  
 Ser Ile Val Leu Gln Gln Gly Gly Arg Ser Gln Ser Phe Pro Ile Pro  
 690                      695                      700  
 Pro Ser Gly Thr Gly Thr Gln Asn Met Gly Ala Gln Leu Trp Ala Ala  
 705                      710                      715                      720  
 Ala Ser Gln Val Ala Ser Thr Leu Gly Gln Val Val Asn Gln Ala Ala  
 725                      730                      735  
 Thr Ala Gly Ser Gln Pro Ser Ser Arg Arg Ser Ser Pro Thr Ser Pro  
 740                      745                      750  
 Arg Arg Lys  
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Met Ser Thr Val Thr Thr Glu Pro Cys Ser Ser Ile His Ile Ser Leu  
 1                      5                      10                      15  
 Asn Asn Asp Trp Arg Asp Ser Gln Pro Tyr Ser Leu Asp Arg Ala Ser  
 20                      25                      30  
 Glu Leu Leu His Phe Arg Phe Leu Pro Ser Leu Val Phe Ser Asn Trp  
 35                      40                      45  
 Lys Val Glu Gln Gln Ile Glu Thr Leu Cys His Lys Ser Glu Lys Arg  
 50                      55                      60  
 Arg Leu Ile Ser Pro Leu Ala Lys Trp Leu Gly Lys Leu His Lys Gln  
 65                      70                      75                      80  
 Asp Leu Leu Cys Pro Pro Ala Pro Pro Val Ser Val Cys Trp Ile Asn  
 85                      90                      95  
 Ala His Val Gly Tyr Gly Val Phe Ala Arg Asp Glu Ile Ala Pro Trp  
 100                      105                      110

Thr Tyr Ile Gly Glu Tyr Thr Gly Ile Leu Arg His Arg Gln Ala Ile  
 115 120 125  
 Trp Met Asp Glu Asn Asp Tyr Cys Phe Arg Tyr Pro Met Pro Leu Phe  
 130 135 140  
 Thr Leu Arg Tyr Phe Thr Ile Asp Ser Gly Lys Gln Gly Asn Val Thr  
 145 150 155 160  
 Arg Phe Ile Asn His Ser Glu Gln Pro Asn Ala Glu Ala Ile Gly Val  
 165 170 175  
 Phe Ser Glu Gly Leu Phe His Val Ile Ile Arg Thr Val Ala Pro Ile  
 180 185 190  
 Tyr Ala Gly Gln Glu Ile Cys Tyr His Tyr Gly Pro Leu Tyr Trp Lys  
 195 200 205  
 His Arg Lys Lys Arg Glu Glu Phe Ile Pro Glu Glu Glu  
 210 215 220

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<400> 55

Met Ser Tyr Pro Asp Ile Ser Asn Val Gln Ala Ser Ser Ile Gln Ser  
 1 5 10 15  
 Ala Leu Leu His Lys Thr Ser Asp Gln Ile Gln Gln Lys Arg Cys Phe  
 20 25 30  
 Lys Gln Ser Thr Phe Val Ile Leu Ala Val Ser Leu Val Ile Ile Gly  
 35 40 45  
 Ser Leu Phe Leu Leu Ala Gly Val Ala Ile Leu Thr Val Phe Ser His  
 50 55 60  
 Gly Val Leu Ser Leu Val Phe Gly Val Leu Gly Ile Val Leu Gly Leu  
 65 70 75 80  
 Leu Leu Leu Ala Gly Gly Val Gly Leu Leu Val Glu Glu Ala Lys Ser  
 85 90 95



Leu Leu

<210> 56  
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Met Ile Lys Gln Ala Cys Lys Phe Tyr Leu Leu Gln Cys Leu Leu Cys  
1 5 10 15  
Ala Leu Tyr Trp Leu Leu Lys Tyr Cys Arg Lys Leu Leu Lys Gly Thr  
20 25 30  
Leu His His Ser Glu Glu Thr Leu Tyr Gln Ala Leu Leu Ser Ser Leu  
35 40 45  
Ile Asp Leu Leu Tyr Gln Leu Lys Gln Leu Pro Ala Pro Thr Asn Glu  
50 55 60

<210> 57  
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<400> 57

Met Arg Thr Tyr Thr Arg Ser Pro Lys Gln Ser Gly Val Glu Arg Lys  
1 5 10 15  
Gln Glu Asp Ala Glu Thr Ser Phe Ile Glu Thr Pro Lys Gly Ile Leu  
20 25 30

Lys Lys Pro Gly Asn Lys Asp Pro Lys Gly Lys His Val His Trp Lys  
35 40 45

Asp Ser  
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<210> 58

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Met Ala Ser Gly Ile Gly Gly Ser Ser Gly Leu Gly Lys Ile Pro Pro  
1 5 10 15

Lys Asp Asn Gly Asp Arg Ser Arg Ser Pro Ser Pro Lys Gly Glu Leu  
20 25 30

Gly Ser His Glu Ile Ser Leu Pro Pro Gln Glu His Gly Glu Glu Gly  
35 40 45

Ala Ser Gly Ser Ser His Ile His Ser Ser Ser Ser Phe Leu Pro Glu  
50 55 60

Asp Gln Glu Ser Gln Ser Ser Ser Ser Ala Ala Ser Ser Pro Gly Phe  
65 70 75 80

Phe Ser Arg Val Arg Ser Gly Val Asp Arg Ala Leu Lys Ser Phe Gly  
85 90 95

Asn Phe Phe Ser Ala Glu Ser Thr Ser Gln Ala Arg Glu Thr Arg Gln  
100 105 110

Ala Phe Val Arg Leu Ser Lys Thr Ile Thr Ala Asp Glu Arg Arg Asp  
115 120 125

Val Asp Ser Ser Ser Ala Ala Ala Thr Glu Ala Arg Val Ala Glu Asp  
130 135 140

Ala Ser Val Ser Gly Glu Asn Pro Ser Gln Gly Val Pro Glu Thr Ser  
145 150 155 160

Ser Gly Pro Glu Pro Gln Arg Leu Phe Ser Leu Pro Ser Val Lys Lys



Lys	His	Gly	Ala	Lys	Thr	Lys	Glu	Ser	Ser	Glu	Ser	Ser	Thr	Pro	Glu	
465					470					475					480	
Ile	Ser	Ile	Ser	Ala	Pro	Ile	Val	Arg	Gly	Trp	Ser	Gln	Asp	Ser	Ser	
				485					490					495		
Val	Ser	Phe	Ile	Val	Met	Glu	Asp	Asp	His	Ile	Phe	Tyr	Asp	Val	Pro	
			500					505					510			
Arg	Arg	Lys	Asp	Gly	Ile	Tyr	Asp	Val	Pro	Ser	Ser	Pro	Arg	Trp	Ser	
		515					520					525				
Pro	Ala	Arg	Glu	Leu	Glu	Glu	Asp	Val	Phe	Gly	Asp	Tyr	Glu	Val	Pro	
	530					535					540					
Ile	Thr	Ser	Ala	Glu	Pro	Ser	Lys	Asp	Lys	Asn	Ile	Tyr	Met	Thr	Pro	
545					550					555					560	
Arg	Leu	Ala	Thr	Pro	Ala	Ile	Tyr	Asp	Leu	Pro	Ser	Arg	Pro	Gly	Ser	
				565					570					575		
Ser	Gly	Ser	Ser	Arg	Ser	Pro	Ser	Ser	Asp	Arg	Val	Arg	Ser	Ser	Ser	
			580					585					590			
Pro	Asn	Arg	Arg	Gly	Val	Pro	Leu	Pro	Pro	Val	Pro	Ser	Pro	Ala	Met	
	595						600					605				
Ser	Glu	Glu	Gly	Ser	Ile	Tyr	Glu	Asp	Met	Ser	Gly	Ala	Ser	Gly	Ala	
	610					615					620					
Gly	Glu	Ser	Asp	Tyr	Glu	Asp	Met	Ser	Arg	Ser	Pro	Ser	Pro	Arg	Gly	
625					630					635					640	
Asp	Leu	Asp	Glu	Pro	Ile	Tyr	Ala	Asn	Thr	Pro	Glu	Asp	Asn	Pro	Phe	
				645					650					655		
Thr	Gln	Arg	Asn	Ile	Asp	Arg	Ile	Leu	Gln	Glu	Arg	Ser	Gly	Gly	Ala	
			660					665					670			
Ser	Ala	Ser	Pro	Val	Glu	Pro	Ile	Tyr	Asp	Glu	Ile	Pro	Trp	Ile	His	
		675					680					685				
Gly	Arg	Pro	Pro	Ala	Thr	Leu	Pro	Arg	Pro	Glu	Asn	Thr	Leu	Thr	Asn	
	690					695					700					
Val	Ser	Leu	Arg	Val	Ser	Pro	Gly	Phe	Gly	Pro	Glu	Val	Arg	Ala	Ala	
705					710					715					720	
Leu	Leu	Ser	Glu	Ser	Val	Ser	Ala	Val	Met	Val	Glu	Ala	Glu	Ser	Ile	
				725					730					735		
Val	Pro	Pro	Thr	Glu	Pro	Gly	Asp	Gly	Glu	Ser	Glu	Tyr	Leu	Glu	Pro	
			740					745					750			

Leu Gly Gly Leu Val Ala Thr Thr Lys Ile Leu Leu Gln Lys Gly Trp  
755 760 765

Pro Arg Gly Glu Ser Asn Ala  
770 775

<210> 59  
<211> 104  
<212> PRT  
<213> C. trachomatis

<220>  
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<223> hypothetical protein

<220>  
<221> misc\_feature  
<223> gi|3328515

<400> 59

Met Gly Asp Val Met Ile Gln Ser Val Lys Thr Glu Ser Gly Leu Val  
1 5 10 15

Glu Gly His Arg Gly Ile Cys Asp Ser Leu Gly Arg Val Val Gly Ala  
20 25 30

Leu Ala Lys Val Ala Lys Leu Val Val Ala Leu Ala Ala Leu Val Leu  
35 40 45

Asn Gly Ala Leu Cys Val Leu Ser Leu Val Ala Leu Cys Val Gly Ala  
50 55 60

Thr Pro Val Gly Pro Leu Ala Val Leu Val Ala Thr Thr Leu Ala Ser  
65 70 75 80

Phe Leu Cys Ala Ala Cys Val Leu Phe Ile Ala Ala Lys Asp Arg Gly  
85 90 95

Trp Ile Ala Ser Thr Asn Lys Cys  
100

<210> 60  
<211> 439  
<212> PRT  
<213> C. trachomatis

<220>  
<221> misc\_feature  
<223> hypothetical protein

<220>

<221> misc\_feature  
<223> gi|3329021

<400> 60

Met Thr Thr Gly Val Arg Gly Asp Asn Ala Pro Asp Pro Ser Leu Leu  
1 5 10 15  
Ala Gln Leu Thr Gln Asn Ala Asn Ser Ala Ser Ala Ala Ser Thr Gly  
20 25 30  
Lys Asn Gly Gln Val Ala Gly Ala Lys Gln Glu Asn Val Asp Ala Ser  
35 40 45  
Phe Glu Asp Leu Leu Gln Asp Ala Gln Gly Thr Gly Gly Ser Lys Lys  
50 55 60  
Ala Thr Ala Asn Gln Thr Ser Lys Ser Gly Lys Ser Glu Lys Ala Gln  
65 70 75 80  
Ala Ser Ser Gly Thr Ser Thr Thr Thr Ser Val Ala Gln Ala Ser Gln  
85 90 95  
Thr Ala Thr Ala Gln Ala Val His Gly Ala Arg Asp Ser Gly Phe Asn  
100 105 110  
Ser Asp Gly Ser Ala Thr Leu Pro Ser Pro Thr Gly Thr Glu Val Asn  
115 120 125  
Gly Val Val Leu Arg Lys Gly Met Gly Thr Leu Ala Leu Met Gly Leu  
130 135 140  
Ile Met Thr Leu Leu Ala Gln Ala Ser Ala Lys Ser Trp Ser Ser Ser  
145 150 155 160  
Phe Gln Gln Gln Asn Gln Ala Ile Gln Asn Gln Val Ala Met Ala Pro  
165 170 175  
Glu Ile Gly Asn Ala Ile Arg Thr Gln Ala Asn His Gln Ala Gln Ala  
180 185 190  
Thr Glu Leu Gln Ala Gln Gln Ser Leu Ile Ser Gly Ile Thr Asn Ile  
195 200 205  
Val Gly Phe Ala Val Ser Val Gly Gly Gly Ile Leu Ser Ala Ser Lys  
210 215 220  
Ser Leu Gly Gly Leu Lys Ser Ala Ala Phe Thr Asn Glu Thr Ala Ser  
225 230 235 240  
Ala Thr Thr Ser Ala Thr Ser Ser Leu Ala Lys Thr Ala Thr Ser Ala  
245 250 255  
Leu Asp Asp Val Ala Gly Thr Ala Thr Ala Val Gly Ala Lys Ala Thr



Val Asp Arg Ala Glu Lys Val Val Lys Glu Lys Arg Arg Leu Leu Glu  
 20 25 30  
 Leu Glu Gln Glu Lys Leu Arg Glu Arg Glu Ser Glu Arg Asp Lys Val  
 35 40 45  
 Lys Asn His Tyr Met Gln Lys Ile Arg Gln Leu Arg Glu Gln Leu Asp  
 50 55 60  
 Asp Gly Thr Thr Ser Asp Ala Ile Leu Lys Met Lys Ala Tyr Ile Lys  
 65 70 75 80  
 Val Val Ala Ile Gln Leu Ser Glu Glu Glu Glu Lys Val Asn Lys Gln  
 85 90 95  
 Lys Glu Asn Val Leu Ala Ala Ser Lys Glu Leu Glu Arg Ala Glu Val  
 100 105 110  
 Glu Leu Thr Lys Arg Arg Lys Glu Glu Glu Lys Thr Arg Leu His Lys  
 115 120 125  
 Glu Glu Trp Met Lys Glu Ala Leu Lys Glu Glu Ala Arg Gln Glu Glu  
 130 135 140  
 Lys Glu Gln Asp Glu Met Gly Gln Leu Leu His Gln Leu His Lys Gln  
 145 150 155 160  
 Lys Gln Arg Glu Ser Gly Glu Asn  
 165

<210> 62  
 <211> 819  
 <212> PRT  
 <213> H. influenzae  
 <220>  
 <221> misc\_feature  
 <223> conserved hypothetical protein

<220>  
 <221> misc\_feature  
 <223> gi|1574537

<400> 62

Met Ala Asp Val Leu Ser Arg Phe Asn Ser Gly Lys Leu Trp Asp Phe  
 1 5 10 15  
 Lys Gly Gly Ile His Pro Pro Glu Met Lys Ser Gln Ser Asn Ser Gln  
 20 25 30  
 Pro Leu Arg His Leu Pro Leu Gly Thr Asp Phe Tyr Ile Pro Leu Lys  
 35 40 45





Phe Ala Gly Gly Pro Met Met Gly Leu Glu Leu Pro Asn Leu Asn Ala  
340 345 350

Pro Val Thr Lys Leu Val Asn Cys Leu Leu Ala Pro Asp Tyr Leu Glu  
355 360 365

Tyr Ala Glu Pro Glu Ala Glu Gln Ala Cys Ile Arg Cys Ser Ser Cys  
370 375 380

Ser Asp Ala Cys Pro Val Asn Leu Met Pro Gln Gln Leu Tyr Trp Phe  
385 390 395 400

Ala Arg Ser Glu Asp His Lys Lys Ser Glu Glu Tyr Ala Leu Lys Asp  
405 410 415

Cys Ile Glu Cys Gly Ile Cys Ala Tyr Val Cys Pro Ser His Ile Pro  
420 425 430

Leu Ile Gln Tyr Phe Arg Gln Glu Lys Ala Lys Ile Trp Gln Ile Lys  
435 440 445

Glu Lys Gln Lys Lys Ser Asp Glu Ala Lys Ile Arg Phe Glu Ala Lys  
450 455 460

Gln Ala Arg Met Glu Arg Glu Glu Gln Glu Arg Lys Ala Arg Ser Gln  
465 470 475 480

Arg Ala Ala Gln Ala Arg Arg Glu Glu Leu Ala Gln Thr Lys Gly Glu  
485 490 495

Asp Pro Val Lys Ala Ala Leu Glu Arg Leu Lys Ala Lys Lys Ala Asn  
500 505 510

Glu Thr Glu Ser Thr Gln Ile Lys Thr Leu Thr Ser Glu Lys Gly Glu  
515 520 525

Val Leu Pro Asp Asn Thr Asp Leu Met Ala Gln Arg Lys Ala Arg Arg  
530 535 540

Leu Ala Arg Gln Gln Ala Ala Ser Gln Val Glu Asn Gln Glu Gln Gln  
545 550 555 560

Thr Gln Pro Thr Asn Ala Lys Lys Ala Ala Val Ala Ala Ala Leu Ala  
565 570 575

Arg Ala Lys Ala Lys Lys Leu Ala Gln Ala Asn Ser Thr Ser Glu Ala  
580 585 590

Ile Ser Asn Ser Gln Thr Ala Glu Asn Gln Val Glu Lys Thr Lys Ser  
595 600 605

Ala Val Glu Lys Thr Gln Glu Asn Ser Thr Ala Leu Asp Pro Lys Lys  
610 615 620

Ala Ala Val Ala Ala Ala Ile Ala Arg Ala Lys Ala Lys Lys Leu Ala

625		630		635		640
Gln Thr Asn Ser Thr Ser Glu Ala Ile Ser Asn Ser Gln Thr Ala Glu						
	645			650		655
Asn Glu Val Glu Lys Thr Lys Ser Ala Val Glu Lys Thr Glu Glu Asn						
	660		665			670
Ser Thr Ala Leu Asp Ala Lys Lys Ala Ala Ile Ala Ala Ala Ile Ala						
	675		680			685
Arg Ala Lys Ala Lys Lys Leu Ala Gln Ala Asn Ser Ala Ser Glu Ala						
	690		695		700	
Ile Ser Asn Ser Gln Thr Ala Glu Asn Glu Val Glu Lys Thr Lys Ser						
	705		710		715	720
Ala Val Glu Lys Thr Gln Gln Asn Ser Thr Ala Leu Asp Pro Lys Lys						
	725		730			735
Ala Ala Val Ala Ala Ala Ile Ala Arg Ala Lys Ala Lys Lys Leu Ala						
	740		745			750
Gln Ala Asn Ser Thr Ser Glu Ala Ile Ser Asn Ser Gln Thr Ala Glu						
	755		760			765
Asn Glu Val Glu Lys Thr Lys Ser Ala Val Glu Lys Thr Gln Glu Asn						
	770		775			780
Ser Thr Ala Leu Asp Pro Lys Lys Ala Ala Val Ala Ala Ala Ile Ala						
	785		790		795	800
Arg Ala Lys Ala Lys Lys Leu Ala Lys Thr Gln Ala Thr Leu Glu Asn						
	805		810			815
Asn Gln Glu						

<210> 63  
 <211> 52  
 <212> PRT  
 <213> H. influenzae

<220>  
 <221> misc\_feature  
 <223> predicted coding region HI1562

<220>  
 <221> misc\_feature  
 <223> gi|1574414

<400> 63

Met Leu Ser Lys Asp Pro Lys Val Leu Ile Lys Leu Gly Glu Leu Glu  
1 5 10 15

Lys Asp Lys Ser Lys Ala Lys Lys Tyr Phe Gly Asp Ala Cys Asp Leu  
20 25 30

Arg Ser Gln Glu Gly Cys Asp Lys Tyr Arg Glu Leu Asn Gln Lys Gln  
35 40 45

Asp Thr Asn Lys  
50

<210> 64

<211> 150

<212> PRT

<213> H. influenzae

<220>

<221> misc\_feature

<223> conserved hypothetical protein

<220>

<221> misc\_feature

<223> gi|1574625

<400> 64

Met Thr Leu Gln Leu Asn Thr Ile Ala Leu Leu Leu Val Ile Leu Leu  
1 5 10 15

Ile Leu Gly Val Leu Ser Asn Asn Ser Thr Ile Thr Ile Ser Ala Ala  
20 25 30

Val Leu Leu Ile Met Gln Gln Thr Phe Leu Ser Ser His Ile Pro Leu  
35 40 45

Leu Glu Lys Tyr Gly Val Lys Ile Gly Ile Ile Ile Leu Thr Ile Gly  
50 55 60

Val Leu Ser Pro Leu Val Ser Gly Lys Ile Gln Leu Pro Asp Leu Ser  
65 70 75 80

Gly Phe Leu Ser Trp Lys Met Ala Leu Ser Ile Ser Val Gly Val Leu  
85 90 95

Val Ala Trp Leu Ala Gly Lys Gly Val Pro Leu Met Gly Glu Gln Pro  
100 105 110

Ile Leu Val Thr Gly Leu Leu Ile Gly Thr Ile Ile Gly Val Ala Phe  
115 120 125

Leu Gly Gly Ile Pro Val Gly Pro Leu Ile Ala Ala Gly Ile Leu Ala  
130 135 140

Leu Leu Leu Gly Lys Ile  
145 150

<210> 65  
<211> 129  
<212> PRT  
<213> H. influenzae

<220>  
<221> misc\_feature  
<223> predicted coding region HI1339

<220>  
<221> misc\_feature  
<223> gi|1574799

<400> 65

Met Glu Lys Ile Met Lys Lys Leu Thr Leu Ala Leu Val Leu Gly Ser  
1 5 10 15  
Ala Leu Val Val Thr Gly Cys Phe Asp Lys Gln Glu Ala Lys Gln Lys  
20 25 30  
Val Glu Asp Thr Lys Gln Thr Val Ala Ser Val Ala Ser Glu Thr Lys  
35 40 45  
Asp Ala Ala Ala Asn Thr Met Thr Glu Val Lys Glu Lys Ala Gln Gln  
50 55 60  
Leu Ser Thr Asp Val Lys Asn Lys Val Ala Glu Lys Val Glu Asp Ala  
65 70 75 80  
Lys Glu Val Ile Lys Ser Ala Thr Glu Ala Ala Ser Glu Lys Val Gly  
85 90 95  
Glu Met Lys Glu Ala Ala Ser Glu Lys Ala Ser Glu Met Lys Glu Ala  
100 105 110  
Val Ser Glu Lys Ala Thr Gln Ala Val Asp Ala Val Lys Glu Ala Thr  
115 120 125

Lys

<210> 66  
<211> 136  
<212> PRT  
<213> H. influenzae

<220>  
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<223> predicted coding region HI1462.1

<220>

<221> misc\_feature

<223> gi|3212225

<400> 66

Met Xaa Gln Ser Asn Tyr Ser Met Glu Lys Ile Met Lys Lys Leu Thr  
1 5 10 15

Leu Ala Leu Val Leu Gly Ser Ala Leu Val Val Thr Gly Cys Phe Asp  
20 25 30

Lys Gln Glu Ala Lys Gln Lys Val Glu Asp Thr Lys Gln Thr Val Ala  
35 40 45

Ser Val Ala Ser Glu Thr Lys Asp Ala Ala Ala Asn Thr Met Thr Glu  
50 55 60

Val Lys Glu Lys Ala Gln Gln Leu Ser Thr Asp Val Lys Asn Lys Val  
65 70 75 80

Ala Glu Lys Val Glu Asp Ala Lys Glu Val Ile Lys Ser Ala Thr Glu  
85 90 95

Ala Ala Ser Glu Lys Val Gly Glu Met Lys Glu Ala Ala Ser Glu Lys  
100 105 110

Ala Ser Glu Met Lys Glu Ala Val Ser Glu Lys Ala Thr Gln Ala Val  
115 120 125

Asp Ala Val Lys Glu Ala Thr Lys  
130 135

<210> 67

<211> 113

<212> PRT

<213> H. influenzae

<220>

<221> misc\_feature

<223> conserved hypothetical protein

<220>

<221> misc\_feature

<223> gi|1574607

<400> 67

Met Phe Thr Asp Trp Lys Glu His Thr Ser His Val Lys Lys Ser Phe

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1             5             10             15
Gly Glu Leu Gly Lys Gln Tyr Pro Lys Met Leu Gln Ala Tyr Gln Ala
    20             25             30
Leu Gly Ala Ala Ala Glu Gly Asn Val Leu Asp Ala Lys Thr Arg
    35             40             45
Glu Leu Ile Ala Leu Ala Val Ala Val Thr Thr Arg Cys Glu Ser Cys
    50             55             60
Ile Ser Ala His Ala Glu Glu Ala Val Lys Ala Gly Ala Ser Glu Ala
    65             70             75             80
Glu Val Ala Ala Ala Leu Ala Thr Ala Ile Ala Leu Asn Ala Gly Ala
    85             90             95
Ala Tyr Thr Tyr Ser Leu Arg Ala Leu Glu Ala Tyr Ser Val Gln Lys
    100            105            110

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Ala

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<210> 68
<211> 33
<212> PRT
<213> H. pylori

<220>
<221> misc_feature
<223> predicted coding region HP0131

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<220>
<221> misc_feature
<223> gi|2313229

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<400> 68

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Met Pro Tyr Pro Phe Met Ser Phe Lys Gln Thr Phe Tyr Tyr Lys Met
1             5             10             15
Glu Ser Lys Thr Met Lys Glu Arg Phe Lys Thr Leu Phe Phe Lys Ile
    20             25             30

```

Phe

```

<210> 69
<211> 12
<212> PRT
<213> H. pylori

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<220>

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<221> misc\_feature  
<223> predicted coding region HP0429

<220>  
<221> misc\_feature  
<223> gi|2313552

<400> 69

Met Asn Glu Asn Gly Lys Lys Glu Ala Leu Gln Leu  
1 5 10

<210> 70  
<211> 26  
<212> PRT  
<213> H. pylori

<220>  
<221> misc\_feature  
<223> predicted coding region HP0560

<220>  
<221> misc\_feature  
<223> gi|2313684

<400> 70

Met Gly Ile Ile Tyr Leu Ile Leu Phe Leu Ile Val Ile Tyr Leu Leu  
1 5 10 15

Tyr Arg Ile Leu Asp Val Leu Glu Gln Lys  
20 25

<210> 71  
<211> 48  
<212> PRT  
<213> H. pylori

<220>  
<221> misc\_feature  
<223> predicted coding region HP0756

<220>  
<221> misc\_feature  
<223> gi|2313894

<400> 71

Met Lys Asp Tyr Glu Asp Glu Leu Glu Asp Phe Glu Glu Glu Glu Leu



1 5 10 15  
 Glu Gly Phe Glu Glu Glu Asp Glu Glu Tyr Gly Asp Tyr Lys Asn Val  
 20 25 30

Tyr Asp Asp Asp Asp Tyr Glu Asp Tyr Asn Ser Asp Tyr Glu Glu Glu  
 35 40 45

<210> 72  
 <211> 23  
 <212> PRT  
 <213> H. pylori

<220>  
 <221> misc\_feature  
 <223> predicted coding region HP1500

<220>  
 <221> misc\_feature  
 <223> gi|2314686

<400> 72

Met Cys Ser Asn Ser Ser Ser Leu Lys Ile Tyr Ser Leu Glu Ser Asn  
 1 5 10 15

Phe Ser Phe Asn Ser Leu Phe  
 20

<210> 73  
 <211> 1805  
 <212> PRT  
 <213> M. genitalium

<220>  
 <221> misc\_feature  
 <223> gi|1045905

<400> 73

Met Lys Pro Phe Asp Lys Lys Pro Ser Leu Gln Pro Ile Tyr Asp Ile  
 1 5 10 15

Gly Phe Asp Asp Gly Tyr Leu Gln Ser Glu Tyr Glu Lys Asn Arg Ser  
 20 25 30

Lys Thr Asp Val Asp Lys Ile Glu Asn Gln Leu Leu Lys Glu Ile Lys  
 35 40 45

Ser Leu Glu Asp Glu Leu Lys Asn Leu Lys Gly Leu Lys Asn Gln Ala  
 50 55 60

Glu Asp Asn Pro Glu Leu Asp Lys Lys Ile Asn His Leu Glu Val Asp  
 65 70 75 80  
 Leu Asn Arg Leu Val Asn Glu Tyr Lys Asn Phe Gln Phe Gln Lys Asn  
 85 90 95  
 His Met Val Asp Lys Val Ser Glu Leu Asp Asn Leu Thr Arg Phe Tyr  
 100 105 110  
 Lys Asn Glu Leu Thr Arg Leu Gln Gln Glu Asn Ala Asp Phe Leu Asn  
 115 120 125  
 Ser Lys Tyr Ala Asn Leu Ala Asn Phe Gln Ala Asn Tyr His Asn Lys  
 130 135 140  
 Leu Asn Asp Phe His Arg Leu Ile Glu Asn Gln Asn Gln Thr Ile Asn  
 145 150 155 160  
 Arg Leu Asn Gln Lys Ile Asn Gly Asn Gln Asn Leu Ile Asp Asn Asn  
 165 170 175  
 Val Ala Leu Leu Gln Asn Pro Asn Ile Thr Val Glu Lys Lys Asn Tyr  
 180 185 190  
 Leu Leu Asn Val Ile Asp Gln Leu Tyr Asn Glu Leu Asp Gln Leu Glu  
 195 200 205  
 Asn Gln Lys Arg Leu Leu Ser Ile Glu Tyr Glu Asn Thr Tyr Arg Glu  
 210 215 220  
 Leu Val Ser Ala Asp Asn Glu Leu Gln Asn Val Tyr Glu Asn Ile Asp  
 225 230 235 240  
 Gln Asn Gln Ile Gln Phe Lys His Gln Tyr Gln Thr Tyr Arg Asp Glu  
 245 250 255  
 Leu Ser Gln Leu Glu Arg Lys Ile Gln Leu Thr Lys Gln Glu Leu Val  
 260 265 270  
 Asp Lys Glu Ser Ala Leu Arg Val Lys Ile Asp Asp Ala Asp Phe Tyr  
 275 280 285  
 Ile Asn Ala Arg Leu Ala Glu Leu Asp Asp Val Ala Lys Gln Leu Ser  
 290 295 300  
 Phe Gln Asp Gly Ile Thr Lys Gln Asn Ala Gln His Val Glu Asp Lys  
 305 310 315 320  
 Leu Val Ala Leu Asn Lys Glu Lys Asp Arg Leu Asn Thr Gln Lys Glu  
 325 330 335  
 Ala Phe Phe Asn Leu Arg Gln Ser Ala Leu Ile Asp Ile Asn Lys Leu  
 340 345 350  
 Gln Gln Glu Asn Glu Leu Phe Ala Lys His Leu Glu His Gln Gln Asn



Val	Glu	Lys	Gln	Lys	Glu	Ile	Leu	Gly	Lys	Lys	Leu	Gln	Asp	Phe	Ser		
			660					665					670				
Gln	Thr	Ser	Leu	Asn	Ala	Ser	Lys	Asn	Leu	Ala	Glu	Arg	Glu	Met	Ala		
		675					680					685					
Ile	Lys	Phe	Lys	Glu	Lys	Glu	Ile	Glu	Ala	Thr	Glu	Lys	Gln	Leu	Leu		
	690					695					700						
Asn	Asp	Val	Asn	Asn	Ala	Glu	Val	Ile	Gln	Ala	Asp	Leu	Ala	Gln	Leu		
705					710				715						720		
Asn	Gln	Ser	Leu	Asn	Gln	Glu	Arg	Ser	Glu	Leu	Gln	Asn	Ala	Lys	Gln		
			725					730						735			
Arg	Ile	Ala	Asp	Phe	His	Asn	Asp	Ser	Leu	Lys	Lys	Leu	Asn	Glu	Tyr		
		740						745					750				
Glu	Leu	Ser	Leu	Gln	Lys	Arg	Leu	Gln	Glu	Leu	Gln	Thr	Leu	Glu	Ala		
		755					760					765					
Asn	Gln	Lys	Gln	His	Ser	Tyr	Gln	Asn	Gln	Ala	Tyr	Phe	Glu	Gly	Glu		
	770					775					780						
Leu	Asp	Lys	Leu	Asn	Arg	Glu	Lys	Gln	Ala	Phe	Leu	Asn	Leu	Arg	Lys		
785					790					795					800		
Lys	Gln	Thr	Met	Glu	Val	Asp	Ala	Ile	Lys	Gln	Arg	Leu	Ser	Asp	Lys		
			805						810					815			
His	Gln	Ala	Leu	Asn	Met	Gln	Gln	Ala	Glu	Leu	Asp	Arg	Lys	Thr	His		
			820					825					830				
Glu	Leu	Asn	Asn	Ala	Phe	Leu	Asn	His	Asp	Ala	Asp	Gln	Lys	Ser	Leu		
		835					840					845					
Gln	Asp	Gln	Leu	Ala	Thr	Val	Lys	Glu	Thr	Gln	Lys	Leu	Ile	Asp	Leu		
	850					855					860						
Glu	Arg	Ser	Ala	Leu	Leu	Glu	Lys	Gln	Arg	Glu	Phe	Ala	Glu	Asn	Val		
865				870						875					880		
Ala	Gly	Phe	Lys	Arg	His	Trp	Ser	Asn	Lys	Thr	Ser	Gln	Leu	Gln	Lys		
			885						890					895			
Ile	Tyr	Glu	Leu	Thr	Lys	Lys	Gln	Glu	Ser	Glu	Gln	Thr	Gln	Lys	Glu		
		900						905					910				
Thr	Glu	Leu	Lys	Ile	Ala	Phe	Ser	Asp	Leu	Gln	Lys	Asp	Tyr	Gln	Val		
		915					920					925					
Phe	Glu	Leu	Gln	Lys	Asp	Gln	Glu	Phe	Arg	Gln	Ile	Glu	Ala	Lys	Gln		
	930					935					940						

Arg Glu Leu Asp Lys Leu Ala Glu Lys Asn Asn Gln Val Lys Leu Glu  
 945 950 955 960  
 Leu Asp Asn Arg Phe Gln Ala Leu Gln Asn Gln Lys Gln Asp Thr Val  
 965 970 975  
 Gln Ala Gln Leu Glu Leu Glu Arg Glu Gln His Gln Leu Asn Leu Glu  
 980 985 990  
 Gln Thr Ala Phe Asn Gln Ala Asn Glu Ser Leu Leu Lys Gln Arg Glu  
 995 1000 1005  
 Gln Leu Thr Lys Lys Ile Gln Ala Phe His Tyr Glu Leu Lys Lys  
 1010 1015 1020  
 Arg Asn Gln Phe Leu Ala Leu Lys Gly Lys Arg Leu Phe Ala Lys  
 1025 1030 1035  
 Glu Gln Asp Gln Gln Arg Lys Asp Gln Glu Ile Asn Trp Arg Phe  
 1040 1045 1050  
 Lys Gln Phe Glu Lys Glu Tyr Thr Asp Phe Asp Glu Ala Lys Lys  
 1055 1060 1065  
 Arg Glu Leu Glu Glu Leu Glu Lys Ile Arg Arg Ser Leu Ser Gln  
 1070 1075 1080  
 Ser Asn Val Glu Leu Glu Arg Lys Arg Glu Lys Leu Ala Thr Asp  
 1085 1090 1095  
 Phe Thr Asn Leu Asn Lys Val Gln His Asn Thr Gln Ile Asn Arg  
 1100 1105 1110  
 Asp Gln Leu Asn Ser Gln Ile Arg Gln Phe Leu Leu Glu Arg Lys  
 1115 1120 1125  
 Asn Phe Gln Arg Phe Ser Asn Glu Ala Asn Ala Lys Lys Ala Phe  
 1130 1135 1140  
 Leu Ile Lys Arg Leu Arg Ser Phe Ala Ser Asn Leu Lys Leu Gln  
 1145 1150 1155  
 Lys Glu Ala Leu Ala Ile Gln Lys Leu Glu Phe Asp Lys Arg Asp  
 1160 1165 1170  
 Glu Gln Gln Lys Lys Glu Leu Gln Gln Ala Thr Leu Gln Leu Glu  
 1175 1180 1185  
 Gln Phe Lys Phe Glu Lys Gln Asn Phe Asp Ile Glu Lys Gln Arg  
 1190 1195 1200  
 Gln Leu Val Ala Ile Lys Thr Gln Cys Glu Lys Leu Ser Asp Glu  
 1205 1210 1215  
 Lys Lys Ala Leu Asn Gln Lys Leu Val Glu Leu Lys Asn Leu Ser

1220 1225 1230  
 Gln Thr Tyr Leu Ala Asn Lys Asn Lys Ala Glu Tyr Ser Gln Gln  
 1235 1240 1245  
 Gln Leu Gln Gln Lys Tyr Thr Asn Leu Leu Asp Leu Lys Glu Asn  
 1250 1255 1260  
 Leu Glu Arg Thr Lys Asp Gln Leu Asp Lys Lys His Arg Ser Ile  
 1265 1270 1275  
 Phe Ala Arg Leu Thr Lys Phe Ala Asn Asp Leu Arg Phe Glu Lys  
 1280 1285 1290  
 Lys Gln Leu Leu Lys Ala Gln Arg Ile Val Asp Asp Lys Asn Arg  
 1295 1300 1305  
 Leu Leu Lys Glu Asn Glu Arg Asn Leu His Phe Leu Ser Asn Glu  
 1310 1315 1320  
 Thr Glu Arg Lys Arg Ala Val Leu Glu Asp Gln Ile Ser Tyr Phe  
 1325 1330 1335  
 Glu Lys Gln Arg Lys Gln Ala Thr Asp Ala Ile Leu Ala Ser His  
 1340 1345 1350  
 Lys Glu Val Lys Lys Lys Glu Gly Glu Leu Gln Lys Leu Leu Val  
 1355 1360 1365  
 Glu Leu Glu Thr Arg Lys Thr Lys Leu Asn Asn Asp Phe Ala Lys  
 1370 1375 1380  
 Phe Ser Arg Gln Arg Glu Glu Phe Glu Asn Gln Arg Leu Lys Leu  
 1385 1390 1395  
 Leu Glu Leu Gln Lys Thr Leu Gln Thr Gln Thr Asn Ser Asn Asn  
 1400 1405 1410  
 Phe Lys Thr Lys Ala Ile Gln Glu Ile Glu Asn Ser Tyr Lys Arg  
 1415 1420 1425  
 Gly Met Glu Glu Leu Asn Phe Gln Lys Lys Glu Phe Asp Lys Asn  
 1430 1435 1440  
 Lys Ser Arg Leu Tyr Glu Tyr Phe Arg Lys Met Arg Asp Glu Ile  
 1445 1450 1455  
 Glu Arg Lys Glu Ser Gln Val Lys Leu Val Leu Lys Glu Thr Gln  
 1460 1465 1470  
 Arg Lys Ala Asn Leu Leu Glu Ala Gln Ala Asn Lys Leu Asn Ile  
 1475 1480 1485  
 Glu Lys Asn Thr Ile Asp Phe Lys Glu Lys Glu Leu Lys Ala Phe  
 1490 1495 1500



Ala Ala Pro Asn Ile Thr Lys Gln Gln Gln Ile Ala Gln Leu Asn  
1775 1780 1785

Ala Glu Ile Asn Asn Ile Lys Arg Leu Ile Ala Gln Lys Ala Ala  
1790 1795 1800

Ser Lys  
1805

<210> 74  
<211> 74  
<212> PRT  
<213> M. genitalium

<220>  
<221> misc\_feature  
<223> hypothetical protein

<220>  
<221> misc\_feature  
<223> gi|1045811

<400> 74

Met Gln Tyr Ser Ala Leu Ile Pro Leu Phe Ile Leu Leu Ile Ser Leu  
1 5 10 15

Val Leu Phe Cys Phe Ser Phe Arg Lys Asn Gln Ser Glu Asn Gln Ile  
20 25 30

Val Lys Ile Leu Phe Phe Ala Tyr Cys Ile Asp Phe Leu Ala Leu Ile  
35 40 45

Leu Ala Val Met Leu Leu Thr Phe Leu Ser His Gly Leu Leu Ser Leu  
50 55 60

Ala Ile Leu Ile Pro Val Leu Val Phe Gln  
65 70

<210> 75  
<211> 1033  
<212> PRT  
<213> M. pneumoniae

<220>  
<221> misc\_feature  
<223> MG328 homolog

<220>  
<221> misc\_feature  
<223> gi|1674046



<400> 75

Met Glu Phe Leu Glu Gln Glu Gly Gln Glu Val Leu Thr Lys Glu Ile  
1 5 10 15

Lys Ala Gly Phe Cys Glu Ile Thr Pro Ser Ser Ile Thr Glu Gln Thr  
20 25 30

Thr Lys Pro Gln Leu Asp Glu Thr Gln Leu Val Asp Glu Tyr Val His  
35 40 45

Thr Lys Glu Leu Glu Thr Thr Pro Ile Pro Ile Ser Phe Ala Thr Lys  
50 55 60

Glu Val Leu Phe Glu Glu Val Phe Asn Thr Pro Ser Thr Gln Gln Val  
65 70 75 80

Asp Glu Ser Val Leu Val Asn Glu Tyr Ile Glu Leu Thr Gln Gln Ile  
85 90 95

Lys Asn Ala Ser Glu Gln Val Ser Ser Asn His Thr His Lys Phe Ser  
100 105 110

Val Ala Thr Glu Pro Ala Ala Thr Lys Ala Val Ser Glu Thr Met Leu  
115 120 125

Leu Asp Asp Tyr Val Glu Met Val Glu Gln Asp Val Gln Ala Gln Thr  
130 135 140

Ala Leu Pro Gln Ala Ala Leu Asp Pro Thr Val Ser Leu Thr Phe Ser  
145 150 155 160

Ser Pro Ile Asp Ser Asn Ala Ile Leu Val Tyr Pro Glu Met Lys Val  
165 170 175

Pro His Val Phe Asp Thr Val Ala Pro Thr Thr Thr Thr Val Pro Leu  
180 185 190

Asp Gln Thr Gln Leu Leu Asp Glu Leu Val Glu Val Pro Val Leu Thr  
195 200 205

His Thr Val Thr Pro Ala Pro Leu Gln Pro Lys Ala Ala Pro Thr Asn  
210 215 220

Phe Ala Leu Asp Gln Thr Gln Leu Val Asp Glu Leu Val Thr Val Pro  
225 230 235 240

Leu Thr His Thr Leu Val Asn Glu Ser Ala Pro Val Thr Pro Val Val  
245 250 255

Val Thr Ser Pro Ala Ala Glu His Ser Phe Ser Ile Thr Thr Val Asp  
260 265 270

Lys Ala Asn Leu Thr Asn Ala Leu Ser Gln Thr Val Val Ile Lys Pro

275					280					285					
Ala	Glu	Asp	Ser	Ala	His	Gln	Ser	Ala	Val	Leu	Asp	Lys	Glu	Ile	Ala
290						295					300				
Thr	Lys	Gln	Ala	Gln	Leu	Gln	Gln	Leu	Gln	Ala	Gln	Ile	Glu	Leu	Arg
305					310					315					320
Gln	Ala	Gln	Leu	Glu	Thr	Pro	Pro	Val	Thr	Tyr	Met	Gly	Val	Glu	Glu
				325					330					335	
Tyr	Lys	Leu	Leu	Pro	Val	Gln	Asp	Val	Val	Pro	Val	Gln	Pro	Thr	Val
			340					345					350		
Ser	Phe	Glu	Met	Thr	Leu	Leu	Gln	Glu	Gln	Leu	Asp	Lys	Ala	Leu	Lys
		355					360					365			
His	Asn	Ala	Ala	Leu	Gln	Ile	Gln	Leu	Glu	Glu	Gln	Leu	Ala	Lys	Pro
	370					375					380				
Leu	Gln	Tyr	Asp	Gln	Ser	Pro	Val	Leu	Gln	Glu	Arg	Ile	Glu	Leu	Leu
385						390					395				400
Gln	Asn	Gln	Asn	Thr	Asn	Leu	Thr	Gln	Glu	Leu	Asn	Glu	Leu	Gln	Gln
				405					410					415	
Lys	Leu	Phe	Lys	Ser	Gln	Asn	Asn	Ser	Leu	Leu	Leu	Ala	Arg	Leu	Glu
			420					425					430		
Glu	Glu	Asn	Arg	Thr	Leu	Lys	Gln	His	Leu	Gln	Asn	Asn	Leu	Pro	Glu
		435					440					445			
Ala	Asn	Gln	Leu	Asn	Phe	Val	Leu	Glu	Lys	Gln	Leu	Glu	Gln	Leu	Gln
	450					455					460				
Gln	Asp	Lys	His	Ser	Leu	Thr	Leu	Gln	Ile	Glu	Gln	Tyr	Lys	Phe	Asp
465					470					475					480
Ser	Lys	Lys	His	Gln	Glu	Gln	Leu	Ala	Leu	Ile	Pro	Ser	Leu	Arg	Ser
			485					490						495	
Glu	Ile	Asn	Ser	Leu	Glu	Thr	Glu	Val	Ile	Ser	Leu	Lys	Gln	Thr	Asn
		500						505					510		
Gln	Arg	Leu	Ser	Leu	Ile	Glu	Arg	Glu	Asn	Asn	Phe	Leu	Lys	Thr	Glu
	515						520					525			
Ile	Lys	Gln	Leu	Arg	Glu	Thr	Lys	Leu	Asn	Asp	Glu	Asn	Thr	Lys	Tyr
	530					535					540				
Arg	Asn	Leu	Leu	Lys	Gln	Tyr	Glu	Leu	Met	Arg	Ala	Asp	Ser	Asp	Ala
545					550					555					560
Lys	Leu	Lys	Glu	Leu	Glu	His	Glu	Gln	His	Leu	Ala	His	Gln	His	His
			565					570					575		

Gln Glu Gln Leu Ala Gln Leu Gln Arg His Asn Glu Ala Leu Val Lys  
 580 585 590  
 Glu Leu Asp Gln Val Lys Ala Thr Asn Phe Glu Leu Gly Leu Ala Ala  
 595 600 605  
 Gln Gly Phe Glu Gln Gln Lys Val Val Leu Glu Gln Lys Asn Ser Ser  
 610 615 620  
 Leu Leu Ala Ser Leu Gln Ala Ala Glu Glu Asn Val Gln Ala Leu Gly  
 625 630 635 640  
 Ile Thr Asn Ser Glu Leu Gln Asn Gln Leu Asn Val Leu Glu Phe Thr  
 645 650 655  
 His Lys Glu Lys Thr Ala Phe Asp Ser Lys Thr Leu Thr Leu Thr Lys  
 660 665 670  
 Gln Gln Leu Glu Gln Thr Gln Phe Asp Leu Ser Leu Thr Gln Glu Gln  
 675 680 685  
 Leu Ala Thr Phe Lys Gln Gln Asn Gln Ser Leu Thr Asp Lys Leu Met  
 690 695 700  
 Ala Ser Glu Thr Gln Leu Asn His Leu Gln Gln Ser Asp Glu Asn Leu  
 705 710 715 720  
 Thr Gln Leu Gln Thr Gln His Glu Leu Leu Gln Glu Ser Tyr Asn Lys  
 725 730 735  
 Leu Gln Asp Glu Ala Asn His Thr Gln Gln Gln Phe His Gln Ala Gln  
 740 745 750  
 Asn Glu Leu Asp Ala Ala His Gln Gln Leu Ala Leu Phe Lys Gln Asn  
 755 760 765  
 Asn Glu Glu Leu Thr Asp Lys Cys Ser Asn Ile Gln Asn Glu Leu His  
 770 775 780  
 Asp Leu Asn Arg Val Lys Thr Asn Trp Glu Asn Leu Asn Thr Glu His  
 785 790 795 800  
 Asn Leu Leu Gln Asp Lys Tyr Ala Gln Gln Lys Glu Gln Met Gln His  
 805 810 815  
 Glu His Ser Asn Leu Ala Gln Ile Gln Ala Glu His Glu Leu Leu Gln  
 820 825 830  
 Glu Ser Tyr Asn Lys Val Lys Ala Glu Leu Asn Glu Ile Gln Ile Thr  
 835 840 845  
 Asn Leu Asn Glu Ala Asn Ala Gln Tyr Gln Asp Leu Leu Ser Ala Tyr  
 850 855 860

Glu Leu Leu Gln Ser Asn His Asn Lys Leu Lys Gln Glu Leu Gln Val  
865 870 875 880

Leu Asn Gln Val Asn Leu Glu Lys Gln Gln Leu Ala Gln Lys Leu His  
885 890 895

Asn Thr His Gln Ser Leu Ser Gln Thr His Ala Glu Leu Thr Gln Leu  
900 905 910

Gln Ala Ala Tyr Asn Asn Leu Gln Ala Thr Pro Pro Val Ser Asp Glu  
915 920 925

Leu Leu Glu Gln Phe Asn Gln Val Gln Leu Glu Lys Gln Arg Leu Leu  
930 935 940

Gln Gln Asn Leu Ala Leu Val His Glu Leu Gln Tyr Phe Asn Glu Leu  
945 950 955 960

Asn Ser Ser Gln Thr His Glu Ile Lys Thr Lys Gln Asp Glu Thr Val  
965 970 975

Lys Glu Val Ile Ile Val Glu Lys Glu Ile Pro Val Pro Pro Glu Lys  
980 985 990

Lys Pro Arg Leu Lys Lys Arg Asp Ile Val Ile Glu Asn Lys Glu Asp  
995 1000 1005

Ala Leu Gly Lys Leu Ser Lys Lys Glu Arg Ile Gln Ala Tyr Ala  
1010 1015 1020

Glu Arg Leu Ala Lys Ile Asn Gly Lys Gln  
1025 1030

<210> 76  
<211> 22  
<212> PRT  
<213> M. pneumoniae

<220>  
<221> misc\_feature  
<223> A05\_orf139 Protein

<220>  
<221> misc\_feature  
<223> gi|1673719

<400> 76

Met Arg Trp Cys Arg Gly Ser Pro Tyr His Trp Asn Leu Asp Arg Arg  
1 5 10 15

Asn Pro Asp Phe Pro Ala  
20

<210> 77  
<211> 103  
<212> PRT  
<213> M. pneumoniae

<220>  
<221> misc\_feature  
<223> B01\_orf103b Protein

<220>  
<221> misc\_feature  
<223> gi|1673772

<400> 77

Met Ser Ser Val Phe Ser Lys Pro Asn Leu Lys Arg Pro Ser Phe Asp  
1 5 10 15  
Val Lys Asn Leu Thr Lys Pro Ser Arg Leu Leu Ser Ala Thr Leu Arg  
20 25 30  
Ser Ser Cys Ala Phe Leu Ser Ser Ala Ser Phe Phe Ala Cys Ser Leu  
35 40 45  
Cys Phe Phe Cys Cys Ser Ser Ile Ser Phe Cys Ser Leu Ala Ser Ser  
50 55 60  
Ser Ala Arg Leu Arg Tyr Ser Ser Ser His Ser Phe Phe Cys Trp Val  
65 70 75 80  
Leu Phe Ser Arg Ser Gly Leu Ala Tyr Ser Ser Ser Asn Leu Ser Ser  
85 90 95  
Lys Ser Ser Arg Leu Arg Ser  
100

<210> 78  
<211> 112  
<212> PRT  
<213> M. pneumoniae

<220>  
<221> misc\_feature  
<223> VxpSPT7\_orf112 Protein

<220>  
<221> misc\_feature  
<223> gi|1674374

<400> 78

Met Ile Asp Arg Phe Phe Trp Ser Ile Leu Ser Phe Leu Leu Thr Asn  
1 5 10 15

Leu Val Phe Leu Phe Val Ala Phe Leu Ile Leu Ile Ile Tyr Leu Ile  
20 25 30

Ser Glu Ile Thr Gln Gln Phe Ala Phe Ala Phe Ile Ala Thr Ile Val  
35 40 45

Phe Ile Ile Phe Tyr Asn Ile Leu Phe Leu Ser Tyr Leu Leu Thr Met  
50 55 60

Tyr Ile Lys Gly Leu Lys Gln Ile Glu Gln Lys Ser Arg Tyr Leu Leu  
65 70 75 80

Leu Val Leu Asp Val Lys Ala Asp Glu Leu Leu Pro Phe Ser Phe Leu  
85 90 95

Gly Ser Leu Arg Lys Ser His Met Leu Glu Glu Met Leu Leu Glu Gln  
100 105 110

<210> 79  
<211> 147  
<212> PRT  
<213> M. pneumoniae

<220>  
<221> misc\_feature  
<223> B01\_orf147 Protein

<220>  
<221> misc\_feature  
<223> gi|1673775

<400> 79

Met Pro Ser Ser Ala Phe Lys Ile Asn Leu Ser Val Ser Pro Trp Phe  
1 5 10 15

Phe Cys Ser Thr Trp Ser Ser Leu Ile Cys Trp Pro Trp Thr Ile Thr  
20 25 30

Thr Ser Val Ser Arg Ser Thr Leu Ser Ser Thr Thr Trp Ile Leu Trp  
35 40 45

Thr Trp Leu Phe Asn Ser Val Ser Ile Phe Val Ser Arg Trp Ser Phe  
50 55 60

Asp Phe Leu Tyr Ser Leu Asn Ser Leu Arg Val Thr Tyr Ser Val Phe  
65 70 75 80

Thr Gly Ile Thr Gly Leu Leu Ser Leu Asn Cys Leu Leu Lys Leu Pro

[illegible]

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<210> 80
<211> 217
<212> PRT
<213> M. tuberculosis
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<220>
<221> misc_feature
<223> gi|2113965
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Met Ala Ile Ala Asn Pro Ala Glu Pro Gly Ala Ala Gly Arg His His  
1                   5                   10                   15

Gln Asn Gly Pro Arg Arg Ser Gln Ala Ile Thr Pro Glu Pro Gly Ala  
35 40 45

Ala Gly Arg His His Gln Pro Arg Gly Asp Arg Lys Pro Arg Ala Trp  
50 55 60

Arg Gln Cys Gly Pro Gln Asn Gly Pro Arg Arg Ser Gln Ala Ile Thr  
65 70 75 80

Pro Glu Pro Gly Ala Ala Gly Arg His His Gln Pro Arg Gly Asp Arg  
85 90 95

Lys Pro Arg Ala Trp Arg Gln Cys Gly Pro Gln Asn Gly Pro Arg Arg  
100 105 110

Ser Gln Ala Ile Thr Pro Glu Pro Gly Ala Ala Gly Arg His His Gln  
115 120 125

Pro Arg Gly Asp Arg Lys Pro Arg Ala Trp Arg Gln Cys Gly Pro Gln  
130 135 140

Asn Gly Pro Arg Arg Ser Gln Ala Ile Thr Pro Glu Pro Gly Ala Ala  
145 150 155 160

Gly Arg His His Gln Pro Arg Gly Asp Arg Lys Pro Arg Ala Trp Arg  
165 170 175

Gln Cys Gly Pro Gln Asn Gly Pro Arg Arg Ser Gln Ala Ile Thr Pro  
180 185 190

Glu Pro Gly Ala Ala Gly Arg His Trp Leu Asp Gln Arg Pro Val Val  
195 200 205

Pro Asp Gly Val Gly Lys Ser Asp Ser  
210 215

<210> 81  
<211> 27  
<212> PRT  
<213> M. tuberculosis

<220>  
<221> misc\_feature  
<223> hypothetical protein Rv1572c

<220>  
<221> misc\_feature  
<223> gi|2117265

<400> 81

His Gly Gln Pro Arg Thr Asn Thr Phe His His His Glu Lys Leu Leu  
1 5 10 15

Arg His Asn Asp Glu Asp Asn His Asp Asp Pro  
20 25

<210> 82  
<211> 73  
<212> PRT  
<213> M. tuberculosis

<220>  
<221> misc\_feature  
<223> hypothetical protein Rv0378

<220>  
<221> misc\_feature  
<223> gi|2909499



<400> 82

Met Ser Gly Arg Trp Glu Ala Gly Asn Ala Asp Gly Asn Gly Gly Ser  
1 5 10 15

Ala Gly Leu Ile Gly Ser Gly Gly Ala Gly Gly Asp Gly Gly Ser Gly  
20 25 30

Gly Ala Thr Gly Ala Gly Gly Glu Gly Gly Asp Ala Gly Ala Ser Gly  
35 40 45

Ser Ile Asn Gly Asn Ala Gly Asp Pro Gly Asn Ser Gly Glu Arg Gly  
50 55 60

Ala Val Gly Lys Pro Gly Ala Pro Gly  
65 70

<210> 83

<211> 47

<212> PRT

<213> N. meningitis MC58

<220>

<221> misc\_feature

<223> hypothetical protein

<220>

<221> misc\_feature

<223> gi|7225315

<400> 83

Met Glu Trp Ala Glu Asn Glu Thr Val Lys Leu Ala Gln Lys Trp Glu  
1 5 10 15

Gln Glu Gln Lys Lys Gln Gln Ile Gln Gln Lys Lys Glu Thr Glu Lys  
20 25 30

Ser Pro Lys His Lys Ala Ser Arg Asp Asp Trp Glu Met Glu Arg  
35 40 45

<210> 84

<211> 107

<212> PRT

<213> N. meningitis MC58

<220>

<221> misc\_feature

<223> hypothetical protein

<220>

<221> misc\_feature  
<223> gi|7226708

<400> 84

Met Lys Lys Leu Leu Ile Ala Ala Met Met Ala Ala Ala Leu Ala Ala  
1 5 10 15

Cys Ser Gln Glu Ala Lys Gln Glu Val Lys Glu Ala Val Gln Ala Val  
20 25 30

Glu Ser Asp Val Lys Asp Thr Ala Ala Ser Ala Ala Glu Ser Ala Ala  
35 40 45

Ser Ala Val Glu Glu Ala Lys Asp Gln Val Lys Asp Ala Ala Ala Asp  
50 55 60

Ala Lys Ala Ser Ala Glu Glu Ala Val Thr Glu Ala Lys Glu Ala Val  
65 70 75 80

Thr Glu Ala Ala Lys Asp Thr Leu Asn Lys Ala Ala Asp Ala Thr Gln  
85 90 95

Glu Ala Ala Asp Lys Met Lys Asp Ala Ala Lys  
100 105

<210> 85  
<211> 98  
<212> PRT  
<213> N. meningitis MC58

<220>  
<221> misc\_feature  
<223> hypothetical protein

<220>  
<221> misc\_feature  
<223> gi|7226768

<400> 85

Met Lys Lys Ser Leu Phe Ala Ala Ala Leu Leu Ser Leu Val Leu Ala  
1 5 10 15

Ala Cys Gly Gly Glu Lys Ala Ala Glu Ala Pro Ala Ala Glu Ala Pro  
20 25 30

Ala Ala Glu Ala Pro Ala Thr Glu Ala Pro Ala Ala Glu Ala Pro Ala  
35 40 45

Ala Glu Ala Pro Ala Ala Glu Ala Pro Ala Ala Glu Ala Ala Ala Thr  
50 55 60

Glu Ala Pro Ala Ala Glu Ala Ala Ala Thr Glu Ala Pro Ala Ala Glu  
65 70 75 80

Ala Ala Ala Thr Glu Ala Pro Ala Ala Glu Ala Pro Ala Ala Glu Ala  
85 90 95

Ala Lys

<210> 86  
<211> 34  
<212> PRT  
<213> N. meningitis MC58

<220>  
<221> misc\_feature  
<223> hypothetical protein

<220>  
<221> misc\_feature  
<223> gi|7227030

<400> 86

Met Pro Trp Lys Ile Ser Thr Thr Thr Asn Leu Thr Pro Val Pro Ser  
1 5 10 15

Ala Asn Leu Ser Ala Leu Pro Thr Thr Arg Cys Thr Thr Pro Pro Pro  
20 25 30

Thr Pro

<210> 87  
<211> 114  
<212> PRT  
<213> N. meningitis MC58

<220>  
<221> misc\_feature  
<223> hypothetical protein

<220>  
<221> misc\_feature  
<223> gi|7227104

<400> 87

Met Gly Ile Pro Glu Ser Ser Gly Ile Pro Glu Ser Ser Gly Ile Pro  
1 5 10 15

Glu Ser Ser Gly Ile Pro Glu Ser Ser Gly Ile Pro Glu Ser Ser Gly  
 20 25 30  
 Ile Pro Glu Ser Ser Gly Ile Pro Glu Ser Ser Gly Ile Pro Glu Ser  
 35 40 45  
 Ser Gly Ile Pro Glu Ser Ser Gly Ile Pro Glu Ser Ser Gly Ile Pro  
 50 55 60  
 Glu Ser Ser Gly Ile Pro Glu Ser Ser Gly Ile Pro Glu Ser Ser Gly  
 65 70 75 80  
 Ile Pro Glu Ser Ser Gly Ile Pro Glu Ser Ser Gly Ile Pro Glu Pro  
 85 90 95  
 Ser Phe Pro Arg Arg Arg Glu Ser Arg Pro Val Gly Ala Glu Thr Tyr  
 100 105 110

Arg Val

<210> 88  
 <211> 120  
 <212> PRT  
 <213> N. meningitis MC58

<220>  
 <221> misc\_feature  
 <223> hypothetical protein

<220>  
 <221> misc\_feature  
 <223> gi|7226645

<400> 88

Met Ile Ala Lys Ser Leu Phe Phe Arg Cys Gln Lys Ile Tyr Phe Ile  
 1 5 10 15  
 Tyr Phe Ile Leu Phe Ile Cys Leu Tyr Leu Asn Ile Ser Tyr Asp Gly  
 20 25 30  
 Glu Ile Phe Ile Tyr Phe Ile Ile Asn Phe Thr His Leu Leu Ile Cys  
 35 40 45  
 His Gly Ile Leu Leu Val Phe Cys Arg Ile Phe Pro Tyr Glu Asn Ile  
 50 55 60  
 Pro Phe Thr Ile Phe Leu Asn Phe Ile Ser Leu Phe Leu Ile Phe Leu  
 65 70 75 80  
 Pro Leu Ile Phe Thr Ile Arg Glu Leu Ile Asp Ser Tyr Tyr Ile Glu

85 90 95  
 Ser Ile Ile Asn Leu Phe Leu Ile Leu Ile Pro His Val Ile Phe Leu  
 100 105 110

Ile Tyr Leu Lys Gly Lys Gln Ile  
 115 120

<210> 89  
 <211> 78  
 <212> PRT  
 <213> Pseudomonas aeruginosa

<220>  
 <221> misc\_feature  
 <223> AE004587\_5 hypothetical protein

<220>  
 <221> misc\_feature  
 <223> gi|9947556

<400> 89

Met Lys Lys Thr Val Thr Leu Ala Leu Leu Leu Ala Ala Ser Leu Gly  
 1 5 10 15

Leu Ala Ala Cys Asp Lys Lys Glu Glu Asp Lys Ala Ala Ala Pro Ala  
 20 25 30

Ala Pro Ala Thr Glu Thr Gln Pro Ser Ala Pro Ala Thr Pro Pro Ala  
 35 40 45

Glu Pro Ser Ala Pro Ala Pro Ser Ser Asp Thr Pro Ala Thr Pro Gln  
 50 55 60

Thr Pro Ala Pro Thr Pro Glu Gln Pro Gln Gln Asn Gln Gln  
 65 70 75

<210> 90  
 <211> 52  
 <212> PRT  
 <213> Pseudomonas aeruginosa

<220>  
 <221> misc\_feature  
 <223> AE004746\_3 hypothetical protein

<220>  
 <221> misc\_feature  
 <223> gi|9949353

<400> 90

Met Ser Leu Gly Thr Ile Leu Leu Ile Ile Leu Ile Leu Leu Ile  
1 5 10 15

Gly Gly Leu Pro Val Phe Pro His Ser Arg Asn Trp Gly Tyr Gly Pro  
20 25 30

Ser Gly Ile Ile Gly Ala Leu Leu Val Val Leu Leu Val Leu Leu Leu  
35 40 45

Leu Gly Met Ile  
50

<210> 91

<211> 126

<212> PRT

<213> Pseudomonas aeruginosa

<220>

<221> misc\_feature

<223> AE004708\_10 hypothetical protein

<220>

<221> misc\_feature

<223> gi|9948900

<400> 91

Met Leu Lys Leu Phe Ala Thr Gly Leu Ala Ala Ser Phe Leu Leu Leu  
1 5 10 15

Pro Pro Ala Gln Ala Ala Pro Pro Ala Pro Tyr Gly Val Gln Pro His  
20 25 30

Gln Gln Ala Val Gln Arg Ala Gly Glu Gln Arg Gln Arg Gln Leu Gln  
35 40 45

Glu Gln Arg Gln Arg Phe Asp Glu Gln Arg Leu Gln Leu Gln Gln Asp  
50 55 60

Gln Leu Gln Arg Gln Gln Gln Asn Leu Gln Arg Gln Arg Gln Gln Arg  
65 70 75 80

Gln Met Gln Asp Asn Leu Ile Arg Gln Gln Gln Leu Asp Gln Gln Arg  
85 90 95

Trp Arg Leu Glu Gln Asp Gln Arg Arg Leu Asp Ser Glu Arg Arg Gln  
100 105 110

Leu Glu Asn Arg Arg Arg Gln Ser Gln Ser Pro Ala Ile Arg  
115 120 125

<210> 92  
<211> 101  
<212> PRT  
<213> Pseudomonas aeruginosa

<220>  
<221> misc\_feature  
<223> AE004643\_2 hypothetical protein

<220>  
<221> misc\_feature  
<223> gi|9948180

<400> 92

Met Ser Ala Asp Glu Lys Arg Ile Arg Glu Phe Ala Tyr Gln Ile Trp  
1 5 10 15  
Glu Ser Glu Gly Cys Pro Asp Gly Gln Ala Glu Arg His Trp Ala Met  
20 25 30  
Ala Arg Gln Leu Ala Glu Ala Glu Ala Ala Ala Pro Lys Lys  
35 40 45  
Thr Arg Gly Arg Ala Lys Ala Ala Lys Glu Thr Pro Ala Leu Leu Gln  
50 55 60  
Ala Pro Ala Ala Lys Pro Arg Lys Pro Arg Ala Ala Ser Pro Ala Arg  
65 70 75 80  
Pro Ala Ser Glu Lys Pro Ala Ala Ala Lys Pro Arg Ser Arg Arg Lys  
85 90 95  
Pro Glu Ala Gly Glu  
100

<210> 93  
<211> 521  
<212> PRT  
<213> R. prowazekii

<220>  
<221> misc\_feature  
<223> unknown

<220>  
<221> misc\_feature  
<223> gi|3860652

<400> 93

Met Lys Lys Glu Ile Leu Ser Lys Gln Gly Asn Ile Leu Glu Gln Leu  
 1 5 10 15  
 Lys Phe Ile Asn Ala Asn Thr Glu Ile Leu Thr Glu His Ser Lys Ala  
 20 25 30  
 Ile Leu Lys Asp Lys Leu Lys Glu Leu Ser Lys Gln Leu Asp Glu Ile  
 35 40 45  
 Ser Ser Asn Lys Leu Val Gly Phe Ile Leu Asp Glu Asn Lys Ile Asn  
 50 55 60  
 Thr Asn Phe Lys Asn Val Pro Phe Ser Glu Lys Lys Val Arg Glu Gln  
 65 70 75 80  
 Val Asn Asn Leu Asn Asn Lys Ile Leu Glu Lys Ile Phe Leu Lys Asp  
 85 90 95  
 Asp Gly Thr Ile Thr Glu Gln Asp Leu Thr Lys Ile Leu Gln Lys His  
 100 105 110  
 Lys Glu Thr Val Leu Ile Lys Asn Leu Thr Lys Ala Ile Val Tyr Ile  
 115 120 125  
 Asp Gly Asn Lys Asn Asn Glu Thr Val Asn Lys Thr Leu Glu Lys Cys  
 130 135 140  
 Leu Glu Glu Thr Thr Pro Glu Gln Gln Gly Met Ile Leu Asp Val Leu  
 145 150 155 160  
 Thr Asn Asn Thr Arg Ile Arg Lys Ala Leu Ile Thr Lys Ile Glu Arg  
 165 170 175  
 Glu Gln Arg Gln Glu His Asn Gln Lys Leu Asn Lys Asn Ile Ala Gly  
 180 185 190  
 Asp Thr Phe Val Asp Ala Leu Lys Lys Ala Leu Val His Arg Thr Ser  
 195 200 205  
 Asn Pro Glu Thr Ile Gln Lys Ser Leu Glu Arg Arg Lys Lys Glu Thr  
 210 215 220  
 Pro Lys Asn Leu Asn Val Trp Asp Arg Ile Ser Gln Asn Ile Pro Asn  
 225 230 235 240  
 Leu Asn Asn Gln Asn Asp Asn Gln Asn Gly Gln Asp Glu Asn Asn Lys  
 245 250 255  
 Glu Trp Glu Glu Ser Asn Gln Asn Ala Asp Tyr Leu Asn Asn Thr Asn  
 260 265 270  
 Ile Tyr Arg Ile Thr Lys Ala Lys Gln Asp Leu Glu Lys Ala Val Lys  
 275 280 285  
 Glu Thr Ile Asn Lys Phe Ser Ala Met Ser Thr Leu Ile Lys Asp Asn



290	295	300
Thr Ile Lys Asn Thr Met Ala Tyr Gln Lys Tyr Leu Lys Gly Ala Glu 305	310	315 320
Asp Gln Leu Ala Leu Ala Lys Glu Lys Gly Lys Glu Leu Ile Glu Asn 325	330	335
Ser Val Gln Thr Phe Lys Ile Ile Pro Lys Lys Tyr Gln Asp Asp Met 340	345	350
Asn Glu Asn Trp Gln Asn Tyr Leu Ser Pro Glu Glu Ile Ile Glu Leu 355	360	365
Thr Ala Leu Asn Glu His Thr Asn Thr Leu Thr Ser Asn Lys Asn Lys 370	375	380
Ser Gly Tyr Phe Thr Ser Thr Ala Glu Ala Leu Gln Cys Lys Thr Lys 385	390	395 400
Gln Gln Glu Tyr Tyr Thr Leu Leu Ser Lys Leu Lys Lys Ile Gly Ile 405	410	415
Glu Lys Gln Gln Lys Lys Leu Val Lys Asp Tyr Val Asp Glu Met Ile 420	425	430
Thr Asn Ala Lys Gln Ala Val Lys Lys Ile Glu Arg Thr Leu Glu Lys 435	440	445
Val Asn Gln Lys Lys Glu Asn Lys Tyr Glu Phe Ser Glu Ser Ser Ala 450	455	460
Leu Ile Ser Lys Glu Ile Leu Asp Ala Gln Ala Arg Leu Glu Asn Ala 465	470	475 480
Lys Gln Lys Ile Glu Phe Ile Lys Leu Lys Gln Ile Ile Ser Asp Lys 485	490	495
Arg Gln Val Asn Ser Ser Asp Glu Asp Ser Asp Asp Asp Ser Lys Lys 500	505	510
Lys Cys Asn Gln Thr Lys Ser Arg Thr 515	520	

<210> 94  
 <211> 143  
 <212> PRT  
 <213> R. prowazekii

<220>  
 <221> misc\_feature  
 <223> unknown

<220>

<221> misc\_feature  
<223> gi|3860651

<400> 94

Met Lys Ile Gln Met Met Ile Leu Lys Lys Asn Ala Ile Lys Leu Lys  
1 5 10 15  
Val Glu Leu Glu Asn Ala Gln Lys Asp Ile Asn Gln Ala Lys Lys Asn  
20 25 30  
Leu Glu Asn Ala Glu Ala Lys Asn Glu Ala Leu Gln Arg Gln Ile Ile  
35 40 45  
Leu Asn His Asn Gln Asn Glu Val Asn Ser His Thr Thr Lys Asn Gln  
50 55 60  
Glu Lys Phe Lys Thr Asp Asn Val Thr Glu Glu Tyr Leu Glu Asp Met  
65 70 75 80  
Ala Leu Met Phe Lys Asn Ser Glu Asp Thr Ala Glu Gln Lys Glu Glu  
85 90 95  
Val Asn Cys Gln His His Glu Glu Gln Asn Arg Gln Lys Gln Glu His  
100 105 110  
Ile Asn Thr Glu Glu Glu Ala Val His Lys Glu Lys Ile Ile His Ile  
115 120 125  
Thr Glu Glu Thr Glu Thr Glu Ala Phe Lys Lys Glu Ile Asp Leu  
130 135 140

<210> 95  
<211> 369  
<212> PRT  
<213> T. pallidum

<220>  
<221> misc\_feature  
<223> conserved hypothetical protein

<220>  
<221> misc\_feature  
<223> gi|3322751

<400> 95

Met Cys Gln Lys Ser Ser Pro Cys Thr Tyr Ala Arg Val Arg Ser Leu  
1 5 10 15  
Pro Ser Val Arg Leu Phe Ser Phe Leu Ala Leu Ala Phe Ala Ser Phe  
20 25 30

115/155

Leu Arg Ala Glu Asp Ala Phe Asp His Phe Arg Glu Gly Glu Arg Leu  
35 40 45

Leu Ser Leu Gln Gln Ala Gln Gln Ala Ile Gly Pro Leu His Lys Ala  
50 55 60

Ala Gln Gln Lys Pro Ala His Pro Lys Ala Ala Leu Tyr Leu Gly Met  
65 70 75 80

Ala Tyr Leu Gln Thr Gly Arg Tyr Thr Gln Ala Ile Gln Trp Leu Gln  
85 90 95

Asn Pro Pro Val His Ser Gln Glu Tyr Ala His Leu Tyr Ala Tyr Asn  
100 105 110

Leu Gly Asn Val Tyr Phe Val Gln His Arg Tyr Glu Glu Ala Gln His  
115 120 125

Ala Tyr Glu Gln Ala Leu Ala Leu Lys His Asp Tyr Pro Pro Ala Leu  
130 135 140

Leu Asn Arg Ala Asn Thr Ala Met Lys Arg Gln Ala Tyr Ala His Ala  
145 150 155 160

Leu Ala Asp Tyr Lys Lys Tyr Val Ser Gln Asn Pro Thr Ala Ser Gln  
165 170 175

His Tyr Glu Val Gln Arg Met Ile Ala Ala Leu Glu Gln Trp Leu Gln  
180 185 190

Arg Lys Glu Ala Glu Glu Ala Arg Arg Lys Glu Ala Glu Glu Ala Arg  
195 200 205

Arg Lys Glu Ala Glu Glu Ala Arg Arg Lys Glu Ala Glu Glu Ala Arg  
210 215 220

Arg Lys Glu Ala Glu Glu Ala Arg Arg Lys Glu Ala Glu Glu Ala Arg  
225 230 235 240

Arg Lys Glu Ala Glu Glu Ala Arg Arg Lys Glu Ala Glu Glu Ala Arg  
245 250 255

Arg Lys Glu Ala Glu Glu Ala Arg Arg Lys Glu Ala Glu Glu Ala Arg  
260 265 270

Arg Lys Glu Ala Glu Glu Ala Arg Arg Lys Glu Ala Glu Glu Ala Arg  
275 280 285

Arg Lys Glu Ala Glu Glu Ala Arg Arg Lys Glu Ala Glu Glu Ala Arg  
290 295 300

Arg Lys Glu Ala Glu Glu Ala Arg Arg Lys Glu Ala Glu Glu Ala Arg  
305 310 315 320

Arg Lys Glu Ala Glu Glu Ala Arg Arg Lys Glu Ala Glu Phe Glu Ala  
 325 330 335

Leu Lys Arg Ala Leu Arg Leu Lys Gln Ala Glu Asp Ala Arg Thr Leu  
 340 345 350

Ser Thr Gly Ser Glu Asp Thr Val Pro Tyr Gln Glu Glu His Asn Leu  
 355 360 365

Glu

<210> 96  
 <211> 41  
 <212> PRT  
 <213> T. pallidum

<220>  
 <221> misc\_feature  
 <223> predicted coding region TP0266

<220>  
 <221> misc\_feature  
 <223> gi|3322546

<400> 96

Met Val Arg Val Gln Arg Arg Val Leu Lys Asn Phe Met Arg Val Val  
 1 5 10 15

Gly Val Asp Lys Gly Tyr Arg Leu Trp Val Glu Trp Leu Ser Cys Val  
 20 25 30

Cys Cys Gly Tyr Val Val Arg Ala Glu  
 35 40

<210> 97  
 <211> 38  
 <212> PRT  
 <213> Vibrio cholerae

<220>  
 <221> misc\_feature  
 <223> hypothetical protein

<220>  
 <221> misc\_feature  
 <223> gi|9654409

<400> 97

Met Ser Lys Gln Glu Met Lys Lys Pro Gln Leu Ser Leu Lys Glu Lys  
1 5 10 15

Arg Lys Leu Lys Gln Glu Lys Ala Gln Glu Ser Ser Val Ile Lys Pro  
20 25 30

Arg Lys Ser Lys Gly Arg  
35

<210> 98  
<211> 85  
<212> PRT  
<213> Vibrio cholerae  
  
<220>  
<221> misc\_feature  
<223> hypothetical protein

<220>  
<221> misc\_feature  
<223> gi|9654544

<400> 98

Met Phe Leu Ser Phe Ile Cys Phe Tyr Ile Phe Lys Asn Gly Ser Tyr  
1 5 10 15

Phe Ser Phe Ile Cys Leu Val Gly Cys Phe Gln Phe Phe Asp Phe Phe  
20 25 30

Val Val Val Phe Ile Gly Phe Leu Phe Leu Phe Cys Ser Phe Gly Leu  
35 40 45

Val Asp Phe Ser Phe Phe Tyr Phe Val Leu Ile Val Phe His Leu Phe  
50 55 60

Gly Val Asp Leu Leu Ser Trp Phe Gly Trp Trp Gln Val Phe Leu Phe  
65 70 75 80

Cys Asn Phe Ile Glu  
85

<210> 99  
<211> 43  
<212> PRT  
<213> Vibrio cholerae  
  
<220>  
<221> misc\_feature  
<223> hypothetical protein

<220>

<221> misc\_feature  
<223> gi|9654912

<400> 99

Met Leu Asn His Leu Leu Val Arg Leu Thr Ile Gly Cys Leu Leu Val  
1 5 10 15  
Leu Gly Ile Lys Leu Ser Ala Leu Tyr Phe Leu Pro Met Val Leu Leu  
20 25 30  
Leu Asn Thr His His Lys Glu Phe Phe Gly Trp  
35 40

<210> 100  
<211> 31  
<212> PRT  
<213> Vibrio cholerae

<220>  
<221> misc\_feature  
<223> hypothetical protein

<220>  
<221> misc\_feature  
<223> gi|9656707

<400> 100

Met Pro Arg His Pro Phe Val Phe Val Val Ile Pro Lys Pro Pro Phe  
1 5 10 15  
Leu Ala Val Val Ile Val Leu Arg Phe Val Val Thr Arg Tyr Leu  
20 25 30

<210> 101  
<211> 88  
<212> PRT  
<213> Vibrio cholerae

<220>  
<221> misc\_feature  
<223> hypothetical protein

<220>  
<221> misc\_feature  
<223> gi|9657609

<400> 101

Met Leu Ser Leu Ala Val Pro Leu Leu Phe Met Ser Leu Leu Gly Phe  
 1 5 10 15  
 Lys Leu Lys Leu Pro Tyr Gly Leu Leu Met Gly Leu Ile Ile Leu Thr  
 20 25 30  
 Leu Leu Leu Gly Trp Leu Gly Asn Val Ser Leu Leu Pro Val Leu Val  
 35 40 45  
 Val Leu Phe Phe Met Ser Pro Leu Leu Leu Ala Thr Lys Arg Ala Pro  
 50 55 60  
 Trp Gln Ser Ile Leu Phe Gly Val Gly Cys Leu Leu Pro Gln Leu Val  
 65 70 75 80  
 Gln Phe Val Met Leu Asn Gln Arg  
 85

<210> 102  
 <211> 33  
 <212> PRT  
 <213> Vibrio cholerae

<220>  
 <221> misc\_feature  
 <223> hypothetical protein

<220>  
 <221> misc\_feature  
 <223> gi|9657724

<400> 102

Met Arg Arg Leu Leu Cys Leu Ser Phe Asn Thr Leu His Leu Asn Gln  
 1 5 10 15  
 Ile Asn Asp Asn Gln Leu Lys Ser Leu Thr Lys Leu Arg Ile Ile Leu  
 20 25 30

Asn

<210> 103  
 <211> 34  
 <212> PRT  
 <213> Vibrio cholerae

<220>  
 <221> misc\_feature  
 <223> hypothetical protein

<220>

<221> misc\_feature  
<223> gi|9657931

<400> 103

Met Gly Lys Ser Met Pro Ile Gln Leu Leu Leu Leu Ser Ile Pro Phe  
1 5 10 15  
Leu Leu Asp Ala Ala Thr Pro Ser Arg Leu Gly Ile Lys Ile Leu Ile  
20 25 30  
Leu Lys

<210> 104  
<211> 36  
<212> PRT  
<213> Vibrio cholerae

<220>  
<221> misc\_feature  
<223> hypothetical protein

<220>  
<221> misc\_feature  
<223> gi|9658035

<400> 104

Met Gly Tyr Pro Ser Met Ala Ala Ala Leu His Ala Ala Ala Leu Asn  
1 5 10 15  
Ile Ala Leu Asn Ile Gln Leu Asn Ile Ser Met Arg Ala Met Leu Leu  
20 25 30  
Ala Phe Leu Glu  
35

<210> 105  
<211> 38  
<212> PRT  
<213> Vibrio cholerae

<220>  
<221> misc\_feature  
<223> hypothetical protein

<220>  
<221> misc\_feature  
<223> gi|9658254



<400> 105

Met Leu Ile Arg Glu Leu Ala Leu Ala Ala Tyr Gln Phe His Arg Tyr  
1 5 10 15

Phe Lys Ile His Phe Met Phe Gln Phe Lys Val Phe Leu Phe Leu Ala  
20 25 30

Lys Gly Phe Phe Ser Phe  
35

<210> 106

<211> 35

<212> PRT

<213> Vibrio cholerae

<220>

<221> misc\_feature

<223> hypothetical protein

<220>

<221> misc\_feature

<223> gi|9656580

<400> 106

Met Lys Leu Asn Asp Leu Asn Lys Lys Pro Leu Val Ile Lys Lys Thr  
1 5 10 15

Ala Leu Ser Phe Gln Lys Leu Lys Lys Leu Gln Gln Pro Val Lys Lys  
20 25 30

Phe His Phe  
35

<210> 107

<211> 665

<212> PRT

<213> Plasmodium falciparum

<220>

<221> misc\_feature

<223> hypothetical protein

<220>

<221> misc\_feature

<223> gi|3845248

<400> 107

Met Gln Tyr Phe Phe Leu Val Phe Leu Ala Val Leu Ala Lys Gly Phe  
 1 5 10 15  
 Leu Arg Asn Lys Glu His Ala Asn Leu Ile Asn Ser Tyr Asn Asp Ile  
 20 25 30  
 Val Glu Asp Ile Asn Ile Lys Lys Glu Glu Lys Ser Ser Ser Glu Pro  
 35 40 45  
 Pro Phe Ile Pro Ile Lys Asn Lys Ile Asp Asn Val His Thr Lys Asn  
 50 55 60  
 Asn Asn Gln Tyr Asn Leu His Asn Asn Lys Ser Asn Lys Thr His Leu  
 65 70 75 80  
 Thr Tyr Gly Thr His Thr Ser Phe Leu Gln Asn Cys Thr Ile Asn Asp  
 85 90 95  
 Cys Val Asp Val Asp Asn Lys Asp Ser Glu Ile Asn Asn Ile Thr Lys  
 100 105 110  
 Glu Lys Asp Asp Asn Asn Asn Asn Asn Gly Thr Lys Gln Ile Glu Glu  
 115 120 125  
 Lys Asn Lys Ile Asn Lys Ser Asp Leu His Arg Gln Asn Glu Leu Asn  
 130 135 140  
 Leu Gln Ser Gly Lys Asn Glu Gln Asp Ile Asn Lys Asn Glu Lys Gly  
 145 150 155 160  
 Lys Gln Asp Ile Ser Asn Ser Asn Ala Glu Asn Lys Lys Asp Val Lys  
 165 170 175  
 Glu Gly Val Lys Glu Leu Glu Glu Lys Lys Lys Glu Glu Lys Ile Ser  
 180 185 190  
 Asp Asp His Lys Val Glu Glu Asn Lys Lys Ser Asp Asp His Lys Val  
 195 200 205  
 Glu Glu Asn Lys Lys Ser Asp Asp His Lys Val Glu Glu Asn Lys Lys  
 210 215 220  
 Ser Asp Asp His Lys Ile Glu Glu Val Lys Lys Val Glu Glu His Glu  
 225 230 235 240  
 Glu Asp Glu Glu Glu Asp Lys Lys Glu Lys Lys Ser Glu Asn Lys Asn  
 245 250 255  
 Lys Asp Glu Asn Lys Asp Glu Asn Asp Glu Asp Asn Asp Glu Ile Ser  
 260 265 270  
 Asp Glu Asp Glu Val Asp Asp Asp Val Glu Glu Asp Lys Asn Glu Asn  
 275 280 285  
 Asp Asp Ile Asp Asp Asp Lys Lys Glu Thr Asp Lys Thr His Leu Glu



Glu Gln Asn Lys Phe Asn Glu Thr Leu Asn Val Ser Thr Asn His Lys  
595 600 605

Asn His Tyr Glu Glu Lys Lys Lys Tyr Glu Ser Asn Met Phe Asn Val  
610 615 620

Asp Lys Arg Met His Lys Asn Leu Thr Ser Met Asp Thr Ile Leu His  
625 630 635 640

Asn Leu Asn Asp Lys Leu Ser His His Lys Asp Leu Lys Asn Val Leu  
645 650 655

Asn Asp Lys Lys Lys Lys Lys Asn Lys  
660 665

<210> 108

<211> 807

<212> PRT

<213> Plasmodium falciparum

<220>

<221> misc\_feature

<223> hypothetical protein

<220>

<221> misc\_feature

<223> gi|3845292

<400> 108

Met Ala Val Glu Ser Lys Pro Asn Asn Ser Ser Lys Glu Lys Asn Glu  
1 5 10 15

Glu Asn Asp Ile Ile Asn Lys Cys Asp Asp Ser Asn Lys Ile Asn Gly  
20 25 30

Lys Glu Asn Ile Phe Ala Val Glu Lys Val Gly Ile Asn Glu Ser Gly  
35 40 45

His Met Ser Asn Asp Asn Ile Asn Lys Asn Gln Glu Lys Asn Lys Lys  
50 55 60

Lys Lys Lys Lys Lys Asn Thr His Lys Lys Val Asn Ile Asn Asn Thr  
65 70 75 80

His Ile Asn Ile His Thr Thr Asn Asp Lys Asn Asn Gly Gln Asp Ile  
85 90 95

Asn Lys Pro Glu Val Ile Glu Arg Asp Asn Ile Ile Asn Ile Lys Asn  
100 105 110

Asp Thr Asn Asn Ile Leu Asp Ser Ser Tyr Asn Glu Glu Gly Asn Glu

115 120 125  
Asn Asn Arg Asn Asp Ile Asn Asn Asn Asn Asn Asn Asn Asn Ile Asn  
130 135 140  
Ile Asn Asn Asn Asn Ile Asn Asn Ser Cys Ser Asn Asn Tyr Gly Leu  
145 150 155 160  
Lys Lys Lys Ile Thr Leu Leu Lys Arg Asn Asp Ile Lys Asp Glu Gly  
165 170 175  
Tyr Asn Asn Glu Asn Ile Thr Thr Leu Asn Asn Lys Asn Asn Leu Lys  
180 185 190  
Asn Asn Asn Asn Tyr Asn Asp Asn Arg Asn Asn Asn Asn Asn Asn Lys  
195 200 205  
Asn Asn Ile Asn Asn Asn Asn Asn Asn Asn Cys Cys Ser Glu Lys Thr  
210 215 220  
Leu Glu Gln Arg Glu Lys Glu Tyr Asn Lys Ile Arg Ala Arg Ile Phe  
225 230 235 240  
Ser Asn Phe Asn Lys Lys Gln Lys Asn Val Gln Lys Thr Glu Gln Asn  
245 250 255  
Asn Leu Asn His Thr Tyr Leu Asn Asn Asn Ile Ile Asn Asn Ile Asn  
260 265 270  
Asn Gly Asp Asn Gln Tyr Ala Tyr Ile Asn Asn Phe Tyr His Ile Tyr  
275 280 285  
His Asn Asn Ser Tyr Asn His Ile Tyr Arg Gln Asn Asn Ile Pro Ile  
290 295 300  
Cys Asn Ile Asn Asn His Ala Pro Asn Ile Glu Lys Leu Asn Asn Pro  
305 310 315 320  
Tyr Tyr Tyr His Asp Asn His Ile Ala Tyr Thr Asn Tyr Met Tyr Ser  
325 330 335  
Thr Gln Asn Lys Met Asn Asn Met Lys Thr Lys Gln Ile Gly His Tyr  
340 345 350  
Gly Ile Asn Asn Glu Asp Asn Asn Asn Asn Asn Asn Asn Ile Asn  
355 360 365  
Asn Asn Asn Asn Asn Asn Ile Asn Asn Asn Asn Ile Asn Asn Asn Asn  
370 375 380  
Val Pro Leu Cys Ile Pro Gln Leu Asp Asn Tyr Asn Lys Thr Lys Asn  
385 390 395 400  
Asn Phe Asn Gln Gly Thr Asn Asn Phe Asn Gln Gly Thr Asn Asn Phe  
405 410 415



Asp Ser Asn Ile Ala Leu Leu Tyr Asn Asn Lys Pro Asn Ile Asp Phe  
 705 710 715 720  
 Asn Asn Phe Gln Leu Asn His Ile Asn Asn His Met Ile Gln Asn Asn  
 725 730 735  
 Ile Met Thr Asn Asn Val Met Leu Asn Asn Asn Leu Thr Thr Ser Asn  
 740 745 750  
 Phe Asn Tyr Asn Leu Ile Asn Tyr Ser Tyr Glu Pro Phe Tyr Glu Glu  
 755 760 765  
 Asn Leu Met Asn Asp Leu Asp Tyr Cys Arg Asp Ile Ser Leu Tyr Glu  
 770 775 780  
 Lys Arg Tyr Asp Arg Gly Asp Asn Leu Gln Gln Asn His Lys Arg Tyr  
 785 790 795 800  
 Asp Ile Asp Phe Pro Ser Leu  
 805

<210> 109  
 <211> 861  
 <212> PRT  
 <213> Plasmodium falciparum

<220>  
 <221> misc\_feature  
 <223> hypothetical protein

<220>  
 <221> misc\_feature  
 <223> gi|4493994

<400> 109

Met Tyr Glu Leu Leu Leu Leu Arg Phe Leu Lys Tyr Glu Cys Asp Tyr  
 1 5 10 15  
 Asp Asp Ser Glu Asp Ile Leu Asn Lys Tyr Cys Phe Ile Arg Glu Arg  
 20 25 30  
 Lys Tyr Asn Lys Pro Gly Gly Asn Lys Tyr Ile Pro Arg Asp Arg Ser  
 35 40 45  
 Asn Asn Asn Asn Asn Ile Gly Asn Asn Val Asn Gly Met Asn Asn Phe  
 50 55 60  
 Val Leu Leu Asn Asn Asn Asn Asn Met Arg Ile Arg Asn Thr Tyr  
 65 70 75 80  
 Asn Asn Asn Asn Asn Asn Ile Asn Asn Asn Asn Asn Asn Asn Asn  
 85 90 95

Asn	Phe	Asn	Asn	Phe	Asn	Asn	Asn	Asn	Asn	Asn	Asn	Asn	Phe	Asn	Asn		
			100					105					110				
Phe	Asn	Asn	Phe	Asn	Asn	Asn	Asn	Asn	Phe	Asn	Asn	Asn	Asn	His	Phe		
		115					120					125					
Asn	Ile	His	Asn	Ile	Asp	Asn	Tyr	Asp	Asp	Ser	Tyr	Val	Lys	Gly	Arg		
	130					135					140						
His	Arg	Gly	Asn	Tyr	Leu	Ser	Ser	Ser	Leu	Asn	Asn	Ile	Asn	Gly	Lys		
145					150					155					160		
Val	Phe	Lys	Asn	Leu	Asp	Asp	Asn	Cys	Tyr	Asn	Leu	Pro	Thr	Asn	Asn		
				165				170						175			
Leu	Tyr	Ile	Asp	Lys	Glu	Gly	Lys	Met	His	Leu	Thr	Gly	Lys	Glu	His		
			180					185					190				
Tyr	Asn	Ala	Ala	Ser	Ser	Asn	Glu	Tyr	Asn	His	Asn	Asn	Lys	Asn	Thr		
		195					200					205					
Asn	Asn	Tyr	Asn	Asn	Asn	Ser	Tyr	Asn	Asn	Asn	Asn	Phe	Cys	Asn	Asn		
	210					215					220						
Asn	Tyr	Asn	Asp	Asn	Asn	Tyr	Asn	Asn	Ser	Asn	Asn	Lys	Gly	Met	Gly		
225					230				235					240			
Asn	Lys	Tyr	Glu	Arg	Ser	Leu	Asn	Tyr	Leu	Lys	Lys	Glu	His	Asp	Met		
				245				250						255			
Val	Asp	Tyr	Glu	Tyr	Asn	Asn	Lys	Gly	Asn	Ile	Arg	Lys	Asn	Asp	Ser		
			260					265					270				
Glu	Lys	Tyr	Trp	Asp	Asn	Pro	Pro	Leu	His	Tyr	Ser	Lys	Lys	Asn	Asn		
		275				280						285					
Tyr	Asp	Ile	Phe	Thr	Leu	Gly	Asp	Ile	Lys	Lys	Tyr	Ala	Lys	Asn	Asn		
	290					295					300						
Glu	Lys	Lys	Gly	Asn	Asn	Lys	Tyr	Met	Asn	Met	His	Asp	Asn	Asn	Ser		
305					310					315					320		
Asn	Asn	Ser	Asn	Asn	Val	Leu	Asn	Asn	Asn	Asn	Met	Asn	Ser	Asn	Ser		
				325					330					335			
Asn	Asn	Tyr	Asn	Asn	Ile	Phe	Lys	Asp	Asn	Asp	Glu	Glu	Asn	Leu	Thr		
			340					345					350				
Lys	Ser	Asn	Phe	Ala	Lys	Trp	Phe	Lys	Asn	Asn	Asn	Asn	Met	Asn	Val		
		355					360					365					
Asn	Glu	Asn	Thr	Asp	Ile	Ile	Lys	Tyr	Leu	Asn	Asn	Lys	Asn	Ser	Gln		
	370					375					380						



Gly His Ser Asp Gly Lys Asn Asn Asn Asn Asn Asn Gly Asn Asn Ile  
 385 390 395 400  
 Ile Asn Asn Asn Ser Asn Asn Lys Asn Asn Ile Phe Gln Gly Asn Ser  
 405 410 415  
 Arg Asn Tyr Glu Asn Val Met Tyr Asn Ile Asn Asn Asn Asn Asn Asn  
 420 425 430  
 Asn Ile Ile Ser Asn Asn Lys Asn Glu Ala Ser Phe Asn Thr Asp Asn  
 435 440 445  
 Ile Asn Thr Asn Ser Gly Arg Glu Glu Glu Lys Ile Ser Asn Thr Val  
 450 455 460  
 Ala Glu Leu Leu Met Lys Gln Ile Ser Met Ile Lys Glu Arg Asn Lys  
 465 470 475 480  
 Gly Leu Asp Val Leu Glu Lys Lys Asn Thr Phe Gly Phe Leu Asp Asn  
 485 490 495  
 Asn Tyr Gln Asn Tyr Gly Ser Asn Asn Asn Ser Ser Leu Glu Lys Asn  
 500 505 510  
 Asn Met Lys Glu Asn Asp Ile Tyr Ser Lys Glu Ala Ser Lys Arg Ile  
 515 520 525  
 Met Asp Ile Phe Arg Thr Leu Asn Ser Asn Gly Leu Val Ser Gln Glu  
 530 535 540  
 Ser Leu Leu Val Asn Gln Ser Val Leu Asn Asn Asn Asn Asn Tyr Asn  
 545 550 555 560  
 Asn Tyr Asn Ser Asn Asn Asn Arg Asn Lys Asn Gln Asn Asn Asn Asn  
 565 570 575  
 Asn Asn Asn Asn Asn Met Asn Asn Met Asn Asn Ser Asn Asn Asn Ile  
 580 585 590  
 Asn Asn Asn Asn Asn Tyr Tyr Lys Asn Asn His Lys Tyr His Ser Met  
 595 600 605  
 Asp Asn Val Thr Tyr Lys Lys Ile Phe Ile Asn Asn Tyr Ser Asn Asn  
 610 615 620  
 Asp Gly Asn Asn Asn Ser Asn Asn Ser Asn Ser Asn Asn Asn Val Glu  
 625 630 635 640  
 His Tyr Tyr Met Asn Asn Lys Lys Asn Phe Lys Asn Lys Ile Asn Asn  
 645 650 655  
 Tyr His Asn Leu Pro Asp Asn Lys Asn Asn Met Met Asn Asn Asn Thr  
 660 665 670  
 Tyr Asn Asn Ile Asn Lys Asn Asn Leu Ser Asn Met Glu Asn Phe Pro

675	680	685
Pro Ser Leu Ser Phe Asn Asn Ser Asp Ile Asn Lys Asn Asn Ala Gln		
690	695	700
Gly Asn Ile Asn Ile Thr Pro Ile Ile Asn Ser Ile Leu Arg Leu Asp		
705	710	715 720
Asn Glu Val Asp Asn Val His Asn Asn Ser Ile Ser Glu Asn Ile Gln		
	725	730 735
Asn Ala Lys Val Ser Asn Val Leu Asp Ser Leu Lys Ser Leu Leu Lys		
	740	745 750
Ala Ser Lys Ser Gln Gly Asn Asn Asn Tyr Asn Ile Pro Lys Asn Phe		
	755	760 765
Asn Asn Asn Asn Asn Asn Asn Asn Asn Ser Lys Phe Ile Asn Tyr Asn		
	770	775 780
Ser Gln Gln Tyr Tyr Pro Ser His Gln Gln Gln Gln Gln Gln His Gln		
785	790	795 800
Gln Gln Gln Gln Gln Gln Gln Gln Gln Thr Leu Ile Gln Thr Gln Ile		
	805	810 815
Asn Ser Thr His Leu Asn Asp Phe Asn Lys Lys Lys Phe Asn Lys Lys		
	820	825 830
Glu Arg Tyr Pro Met Lys Tyr Pro Glu Phe Asp Gly Thr Thr Asn Glu		
	835	840 845
Thr Met Met Val Arg Glu Lys Ala Glu Arg Gln Leu Val		
	850	855 860

<210> 110  
 <211> 54  
 <212> PRT  
 <213> Plasmodium falciparum

<220>  
 <221> misc\_feature  
 <223> Homologue of C.elegans F49C12.11 protein

<220>  
 <221> misc\_feature  
 <223> gi|4494004

<400> 110

Met	Pro	Leu	Asn	Thr	Gln	Gly	Gly	Lys	Lys	Lys	Pro	Leu	Lys	Ala	Ala
1				5				10						15	

Lys Lys Gly Pro Val Glu Leu Thr Glu Glu Asp Ile Ala Phe Lys Lys  
20 25 30

Glu Met Ala Glu Lys Lys Lys Ala Glu Glu Glu Ala Lys Gln Lys Leu  
35 40 45

Leu Lys Ala Lys Lys Lys  
50

<210> 111  
<211> 71  
<212> PRT  
<213> L. major

<220>  
<221> misc\_feature  
<223> hypothetical protein P1105.01

<220>  
<221> misc\_feature  
<223> gi|6996498

<400> 111

Met Arg Glu Arg Leu Ser Thr Asp Glu Tyr Val Tyr Trp Ser Gly Ile  
1 5 10 15

Leu Leu Pro Leu Ile Arg Val Ile Asp Leu Ala Ser Val Asp Ser Pro  
20 25 30

Leu Ala Leu Ala Leu Arg Ala Cys Val Cys Val Cys Val Cys Val Cys  
35 40 45

Val Cys Val Cys Val Cys Val Cys Val Val Val Phe Leu Pro Leu Pro  
50 55 60

Ser Leu Arg Ala Gln Ser Pro  
65 70

<210> 112  
<211> 923  
<212> PRT  
<213> L. major

<220>  
<221> misc\_feature  
<223> AC005941\_2 L5204.2

<220>  
<221> misc\_feature  
<223> gi|6978417

<400> 112

Met Gln Leu Ser Gln Glu Asp Glu Glu Ala Ile Arg Thr Leu Arg Gly  
1 5 10 15  
Glu Ile Glu Ala Ala Trp Ala Lys Ala Asp Thr Ala His Glu Gln Glu  
20 25 30  
Gln Arg Ser Arg Glu Leu Leu His Thr Leu Arg Gln Gln Val Thr Glu  
35 40 45  
Leu Asp Ala Met Val Glu Lys Thr Ala Gly Leu Ser Met Gly Gln Glu  
50 55 60  
Ala Tyr Leu Arg Asp Leu Leu Thr Val Lys Lys Asp Arg Glu Glu Glu  
65 70 75 80  
Ala Met Leu Leu His Ala Ala Leu Asn Arg Thr Glu Ala Asp His Arg  
85 90 95  
Gln Val Cys Val Gln Leu Ala Ala Ala Lys Gln Ala His Glu Ala Ala  
100 105 110  
Gln Arg Glu Arg Asp Glu Gln Arg Gln Val Tyr Gln His Leu Leu Thr  
115 120 125  
Ser Leu Glu Ala Glu Gln Arg Glu Arg Ala Ala Lys Glu Ala Ser Val  
130 135 140  
Arg Gln Tyr Arg Asp Thr Thr Glu Leu Cys Met Arg Arg Leu Asp Glu  
145 150 155 160  
Arg Gly Val Glu Val Glu Arg Ala Ile Arg Glu Glu Lys Lys Ala Ala  
165 170 175  
Lys Glu Ala Glu Gly Thr Ala Gln Glu Ile Gln Ala Ile Ala Arg Gln  
180 185 190  
Leu Gln Glu Arg Gln Glu Arg Phe Gly Val Glu Ala Ala Arg Leu Ala  
195 200 205  
Ala Ala Glu Arg Glu Asn Thr Ile Leu Thr Arg Glu Leu Pro Gln Arg  
210 215 220  
Gln Ala Ala Leu His Glu Gln Gln Asp Glu Leu Lys Arg Glu Glu Lys  
225 230 235 240  
Gln Leu His Leu Leu Glu Lys Ser Ala Arg Ala Gln Gln Ala Glu Leu  
245 250 255  
Ala Ala Leu Val Glu Lys Arg Ala Thr Ala Ala Ala Ala Val Gln Thr  
260 265 270  
Arg Ala Asn Ser Val Asp Ala Ala Leu Thr Glu Leu Ala Thr Glu Glu

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Lys	Ala	Arg	Ala	Ala	Leu	Glu	Glu	Ala	Val	Ala	Lys	Glu	Met	Gln	Arg
290					295					300					
Lys	Thr	Asn	Thr	Met	His	Thr	Asn	Thr	Phe	Lys	Ala	Thr	Ala	Ser	Ser
305					310					315					320
Lys	Val	Glu	Gly	Gln	Arg	Val	Met	Glu	Ala	Gly	Lys	Ser	Arg	Arg	Leu
				325					330					335	
His	Gln	Gln	Leu	Glu	Leu	Leu	Arg	Thr	Glu	Asn	Glu	Lys	Met	Arg	Lys
			340					345					350		
Glu	Ile	Tyr	Tyr	Ala	Glu	Gln	Asn	His	Glu	Lys	Asn	Thr	Lys	Glu	Ala
		355					360						365		
Gln	Gln	Ala	Leu	Leu	Asn	Tyr	His	Arg	Thr	Leu	Asp	Ala	Ile	Arg	Thr
		370					375					380			
Arg	Arg	Ser	Glu	Ala	Lys	Ala	Val	Glu	Glu	Asp	Ile	Ala	Leu	His	Gln
385					390					395					400
Lys	Lys	Leu	Lys	Ala	Gln	Gln	Ala	Leu	Leu	Ser	Thr	Val	Thr	Ala	Asp
			405						410					415	
Arg	Gln	Lys	Thr	Glu	Lys	Ala	Leu	Arg	Glu	Thr	Glu	Ala	Glu	Leu	Leu
			420					425					430		
Leu	Leu	Arg	Asn	Arg	His	Ala	Ser	Lys	Gln	Glu	Glu	Leu	Glu	Ser	Val
		435					440					445			
Lys	Thr	Glu	Leu	Ile	Gln	Gln	Glu	Ala	Asp	Met	Cys	Gln	Leu	His	Gly
		450					455					460			
Leu	Ser	Arg	Gln	Leu	Asn	Lys	Asp	Val	Ala	Asn	Thr	Glu	Gln	Arg	Leu
465					470					475					480
Arg	Phe	Leu	Arg	Glu	Asp	Gln	Gln	His	Ala	Glu	Ser	Arg	Val	Glu	Ala
			485						490					495	
Leu	Arg	Ser	Glu	Ala	Gln	Glu	Leu	Arg	Gln	Val	Ile	Ala	Gln	Tyr	Asp
			500					505					510		
Leu	Glu	Ala	Gln	Gln	Gln	Gly	Thr	Arg	Leu	Lys	Tyr	Met	Thr	His	Glu
		515					520					525			
Arg	Asn	Ala	Ile	Ala	Thr	Gln	Leu	Leu	Leu	Arg	Ser	Glu	Glu	Leu	Glu
		530					535					540			
Leu	Ile	Arg	Glu	Lys	Ile	Arg	Leu	Ala	Asp	Ala	Thr	Arg	Val	Ser	Gly
545					550					555					560
Thr	Thr	Lys	Tyr	Gln	Arg	Ala	Met	Lys	Gln	Leu	Leu	Glu	Ser	Arg	Asp
			565						570					575	

Leu Leu Val Glu Gln Arg Leu Arg Cys Arg Ile Ala Leu Val Arg Leu  
 580 585 590  
 Arg Tyr Leu Asp Arg Leu His Thr Lys Glu Val His Gln Glu Lys Leu  
 595 600 605  
 Leu Ser Gln Ser Arg Ala Arg Val Arg Ala Leu Ala Asp Glu Leu Gly  
 610 615 620  
 Thr Lys His Asn Val His Cys Trp Arg Ser Met Glu Ser Asn Ala Pro  
 625 630 635 640  
 Glu Val Leu Asp Ala Leu Ala Lys Val Gln Leu Leu Gln Ala Lys Leu  
 645 650 655  
 Leu Arg Lys His Gly Glu Leu Lys Glu Lys Thr Asp Leu Val Glu Lys  
 660 665 670  
 Glu Glu Arg Ala Tyr Gln Gln Leu Arg Gln Lys Leu Ala Arg Met Pro  
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 Gly Pro Glu Ala Ala Glu Glu Leu Ala Leu Cys Ala Glu Asn Met Gln  
 690 695 700  
 Gln Arg Lys Ala Gln Leu Leu Cys Met Thr Asp Ser Leu Ala Glu Ala  
 705 710 715 720  
 Glu Gln Glu Ala Glu Val Leu Glu Val His Val Ala Gln Leu Gln Glu  
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 Glu Leu Gln Asp Leu Lys His Arg Tyr Tyr Gln Glu Lys Thr Lys His  
 740 745 750  
 Ala Ala Leu Arg Gln Glu Glu Lys Leu Val Ala Arg Thr Trp Gly Ala  
 755 760 765  
 Gly Gly Ala Gly Ala Ala Arg Gln Ala Gly Ser Gly Thr Gly Ser Ser  
 770 775 780  
 Val Gly Asp Gly Asp Gly Ala Val Val Ala Ala Gly Ala Ser Ala Pro  
 785 790 795 800  
 Ser Ala Glu Gln Arg Arg Thr Asn Thr Asp Asp Arg Ser Pro Ser Ala  
 805 810 815  
 Gly Gly Pro Ala Ser Ala Asp Val Glu His Arg Ser Ala Ser Gln Pro  
 820 825 830  
 Gln Gln Pro His Ser His Ala Gly Gly Ser Ala Ile Val Ser Asn Ser  
 835 840 845  
 His Asn Gly Val Gln Ala Ala Ala Ser Gly Thr Gly Arg Met Ser Ala  
 850 855 860

Ala Asn Ser Gly Arg Val Gly Asn Gly Ser Val Pro Pro Arg Asn Gly  
865 870 875 880

Arg Arg Arg Ala Pro Leu Ala Glu Ala Ile Leu Asp Thr Leu Thr Ala  
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Gly Pro Pro Gln Pro Asn Phe Pro Leu Gln Arg Pro Pro His Gln Arg  
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Gln Phe Val Gly Gly Gly Phe Ser Leu Thr Arg  
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35 40 45

Cys Ser Lys Cys Ala Ala Thr Lys Thr Val Ile Pro Arg Tyr Tyr Ser  
50 55 60

Asn Glu Thr Val Pro Val Cys Gln Arg Cys Tyr Gln Val Val Glu Arg  
65 70 75 80

Tyr Lys Glu Arg Gly Ser Val Thr Pro Gly Tyr Val Val His Ser Thr  
85 90 95

Thr Ile Ser Ala Thr Pro Ala Arg Ser Ser Pro Val Pro Pro Leu His  
100 105 110

Thr Thr Pro Ala Leu Arg Pro His Ala Pro Ser Pro Gln Pro Ala Ser  
115 120 125

Val Val Ser Thr Ala Thr Leu Val His Pro Val Glu Glu Asp Ala Val  
130 135 140

Ser Thr Lys Pro Ser Val Ser Glu Ala Asp Leu His Ala Leu Arg Ser  
 145 150 155 160  
 Ile Ile Glu Thr Leu Gln Gln Ala Leu Asn Asp Glu Gln His Asn Ala  
 165 170 175  
 Ala Leu Ala Ala Thr Ser Ala Ala Glu Gln Leu Arg Thr Ala Lys Glu  
 180 185 190  
 Glu Asn Thr Ala Leu Lys Ser Thr Ala His Leu Leu Gln Gln Arg Leu  
 195 200 205  
 Asp Thr Ala Thr Gln Gln Arg Ala Glu Leu Glu Ala Arg Val Ala Arg  
 210 215 220  
 Leu Ala Ala Asp Arg Asp Glu Ala Arg Gln Gln Leu Ala Ala Asn Ala  
 225 230 235 240  
 Glu Glu Leu Gln Gln Arg Leu Asp Thr Ala Thr Gln Gln Arg Ala Glu  
 245 250 255  
 Leu Glu Ala Arg Val Ala Arg Leu Ala Ala Asp Arg Asp Glu Ala Arg  
 260 265 270  
 Gln Gln Leu Ala Ala Asn Ala Glu Glu Leu Gln Gln Arg Leu Asp Thr  
 275 280 285  
 Ala Thr Gln Gln Arg Ala Glu Leu Glu Ala Gln Val Ala Arg Leu Ala  
 290 295 300  
 Ala Asp Gly Asp Glu Ala Arg Gln Gln Leu Ala Ala Asn Ala Glu Glu  
 305 310 315 320  
 Leu Gln Gln Arg Leu Asp Thr Ala Thr Gln Gln Arg Ala Glu Leu Glu  
 325 330 335  
 Ala Arg Val Ala Arg Leu Ala Ala Asp Arg Asp Glu Ala Arg Gln Gln  
 340 345 350  
 Leu Ala Ala Asn Ala Glu Glu Leu Gln Gln Arg Leu Asp Thr Ala Thr  
 355 360 365  
 Gln Gln Arg Ala Glu Leu Glu Ala Gln Leu Ala Arg Leu Ala Ala Asp  
 370 375 380  
 Arg Asp Glu Ala Arg Gln Gln Leu Ala Ala Asn Ala Glu Glu Leu Gln  
 385 390 395 400  
 Gln Arg Leu Asp Thr Ala Thr Gln Gln Arg Ala Glu Leu Glu Ala Gln  
 405 410 415  
 Val Ala Arg Leu Ala Ala Asn Ala Glu Glu Leu Gln Gln Arg Leu Asp  
 420 425 430



Thr Ala Thr Gln Gln Arg Ala Glu Leu Glu Ala Arg Val Ala Arg Leu  
 435 440 445  
 Ala Ala Asp Arg Asp Glu Ala Arg Gln Gln Leu Ala Ala Asn Ala Glu  
 450 455 460  
 Glu Leu Gln Gln Arg Leu Asp Thr Ala Thr Gln Gln Arg Ala Glu Leu  
 465 470 475 480  
 Glu Ala Arg Val Ala Arg Leu Ala Ala Asp Gly Asp Glu Ala Arg Gln  
 485 490 495  
 Gln Leu Ala Ala Asn Ala Glu Glu Leu Gln Gln Arg Leu Asp Thr Ala  
 500 505 510  
 Thr Gln Gln Arg Ala Glu Leu Glu Ala Gln Val Ala Arg Leu Ala Ala  
 515 520 525  
 Asn Ala Glu Glu Leu Gln Gln Arg Leu Asp Thr Ala Thr Gln Gln Arg  
 530 535 540  
 Ala Glu Leu Glu Ala Arg Val Ala Arg Leu Ala Ala Asp Arg Asp Glu  
 545 550 555 560  
 Ala Arg Gln Gln Leu Ala Ala Asn Ala Glu Glu Leu Gln Gln Arg Leu  
 565 570 575  
 Asp Thr Ala Thr Gln Gln Arg Ala Glu Leu Glu Ala Gln Val Ala Arg  
 580 585 590  
 Leu Ala Ala Asn Ala Glu Glu Leu Gln Gln Arg Leu Asp Thr Ala Thr  
 595 600 605  
 Gln Gln Arg Ala Glu Leu Glu Ala Arg Val Ala Arg Leu Ala Val Asp  
 610 615 620  
 Arg Asp Glu Ala Arg Gln Gln Leu Ala Ala Asn Ala Glu Glu Leu Gln  
 625 630 635 640  
 Gln Arg Leu Asp Thr Ala Thr Gln Gln Arg Ala Glu Leu Glu Ala Gln  
 645 650 655  
 Val Ala Arg Leu Ala Ala Asp Arg Asp Glu Ala Arg Gln Gln Leu Ala  
 660 665 670  
 Ala Asn Ala Glu Glu Leu Gln Gln Arg Leu Asp Thr Ala Thr Gln Gln  
 675 680 685  
 Arg Ala Glu Leu Glu Ala Gln Leu Ala Arg Leu Ala Ala Asp Arg Asp  
 690 695 700  
 Glu Ala Arg Gln Gln Leu Ala Ala Asn Ala Glu Glu Leu Gln Gln Arg  
 705 710 715 720  
 Leu Asp Thr Ala Thr Gln Gln Arg Ala Glu Leu Glu Ala Gln Val Ala

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725	730	735
Arg Leu Ala Ala Asp Arg Asp Glu Ala Arg Gln Gln Leu Ala Ala Asn		
740	745	750
Ala Glu Glu Leu Gln Gln Arg Leu Asp Thr Ala Thr Gln Gln Arg Ala		
755	760	765
Glu Leu Glu Ala Gln Leu Ala Arg Leu Ala Ala Asp Arg Asp Glu Ala		
770	775	780
Arg Gln Gln Leu Ala Ala Asn Ala Glu Glu Leu Gln Gln Arg Leu Asp		
785	790	800
Thr Ala Thr Gln Gln Arg Ala Glu Leu Glu Ala Gln Val Ala Arg Leu		
805	810	815
Ala Ala Asp Arg Asp Glu Ala Arg Gln Gln Leu Ala Ala Asn Ala Glu		
820	825	830
Glu Leu Gln Gln Arg Leu Asp Thr Ala Thr Gln Gln Arg Ala Glu Leu		
835	840	845
Glu Ala Gln Val Ala Arg Leu Ala Ala Asp Arg Asp Glu Ala Arg Gln		
850	855	860
Gln Leu Ala Ala Asn Ala Glu Glu Leu Gln Gln Arg Leu Asp Thr Ala		
865	870	880
Thr Gln Gln Arg Ala Glu Leu Glu Ala Gln Val Ala Arg Leu Ala Ala		
885	890	895
Asn Ala Glu Glu Leu Gln Gln Arg Leu Asp Thr Ala Thr Gln Gln Arg		
900	905	910
Ala Glu Leu Glu Ala Arg Val Ala Arg Leu Ala Ala Asp Arg Asp Glu		
915	920	925
Ala Arg Gln Gln Leu Ala Ala Asn Ala Glu Glu Leu Gln Gln Arg Leu		
930	935	940
Asp Thr Ala Thr Gln Gln Arg Ala Glu Leu Glu Ala Gln Leu Ala Arg		
945	950	955
Leu Ala Ala Asp Arg Asp Glu Ala Arg Gln Gln Leu Ala Ala Asn Ala		
965	970	975
Glu Glu Leu Gln Gln Arg Leu Asp Thr Ala Thr Gln Gln Arg Ala Glu		
980	985	990
Leu Glu Ala Gln Leu Ala Arg Leu Ala Ala Asp Arg Asp Glu Ala Arg		
995	1000	1005
Gln Gln Leu Ala Ala Asn Ala Glu Glu Leu Gln Gln Arg Leu Asp		
1010	1015	1020

1025 1030 1035 1040 1045 1050 1055 1060 1065 1070 1075 1080 1085 1090 1095 1100 1105 1110 1115 1120 1125 1130 1135 1140 1145 1150 1155 1160 1165 1170 1175 1180 1185 1190 1195 1200 1205 1210 1215 1220 1225 1230 1235 1240 1245 1250 1255 1260 1265 1270 1275 1280 1285 1290

Thr	Ala	Thr	Gln	Gln	Arg	Ala	Glu	Leu	Glu	Ala	Gln	Val	Ala	Arg	1025	1030	1035
Leu	Ala	Ala	Asp	Arg	Asp	Glu	Ala	Arg	Gln	Gln	Leu	Ala	Ala	Asn	1040	1045	1050
Ala	Glu	Glu	Leu	Gln	Gln	Arg	Leu	Asp	Thr	Ala	Thr	Gln	Gln	Arg	1055	1060	1065
Ala	Glu	Leu	Glu	Ala	Arg	Val	Ala	Arg	Leu	Ala	Ala	Asp	Arg	Asp	1070	1075	1080
Glu	Ala	Arg	Gln	Gln	Leu	Ala	Ala	Asn	Ala	Glu	Glu	Leu	Gln	Gln	1085	1090	1095
Arg	Leu	Asp	Thr	Ala	Thr	Gln	Gln	Arg	Ala	Glu	Leu	Glu	Ala	Gln	1100	1105	1110
Val	Ala	Arg	Leu	Ala	Ala	Asp	Gly	Asp	Glu	Ala	Arg	Gln	Gln	Leu	1115	1120	1125
Ala	Ala	Asn	Ala	Glu	Glu	Leu	Gln	Gln	Arg	Leu	Asp	Thr	Ala	Thr	1130	1135	1140
Gln	Gln	Arg	Ala	Glu	Leu	Glu	Ala	Arg	Val	Ala	Arg	Leu	Ala	Ala	1145	1150	1155
Asp	Arg	Asp	Glu	Ala	Arg	Gln	Gln	Leu	Ala	Ala	Asn	Ala	Glu	Glu	1160	1165	1170
Leu	Gln	Gln	Arg	Leu	Asp	Thr	Ala	Thr	Gln	Gln	Arg	Ala	Glu	Leu	1175	1180	1185
Glu	Ala	Gln	Leu	Ala	Arg	Leu	Ala	Ala	Asp	Arg	Asp	Glu	Ala	Arg	1190	1195	1200
Gln	Gln	Leu	Ala	Ala	Asn	Ala	Glu	Glu	Leu	Gln	Gln	Arg	Leu	Asp	1205	1210	1215
Thr	Ala	Thr	Gln	Gln	Arg	Ala	Glu	Leu	Glu	Ala	Gln	Val	Ala	Arg	1220	1225	1230
Leu	Ala	Ala	Asp	Gly	Asp	Glu	Ala	Arg	Gln	Gln	Leu	Ala	Ala	Asn	1235	1240	1245
Ala	Glu	Glu	Leu	Gln	Gln	Arg	Leu	Asp	Thr	Ala	Thr	Gln	Gln	Arg	1250	1255	1260
Ala	Glu	Leu	Glu	Ala	Gln	Leu	Ala	Arg	Leu	Ala	Ala	Asp	Arg	Asp	1265	1270	1275
Glu	Ala	Arg	Gln	Gln	Leu	Ala	Ala	Asn	Ala	Glu	Glu	Leu	Gln	Gln	1280	1285	1290

Arg	Leu	Asp	Thr	Ala	Thr	Gln	Gln	Arg	Ala	Glu	Leu	Glu	Ala	Gln
1295						1300					1305			
Val	Ala	Arg	Leu	Ala	Ala	Asn	Ala	Glu	Glu	Leu	Gln	Gln	Arg	Leu
1310						1315					1320			
Asp	Thr	Ala	Thr	Gln	Gln	Arg	Ala	Glu	Leu	Glu	Ala	Arg	Val	Ala
1325						1330					1335			
Arg	Leu	Ala	Ala	Asp	Arg	Asp	Glu	Ala	Arg	Gln	Gln	Leu	Ala	Ala
1340						1345					1350			
Asn	Ala	Glu	Glu	Leu	Gln	Gln	Arg	Leu	Asp	Thr	Ala	Thr	Gln	Gln
1355						1360					1365			
Arg	Ala	Glu	Leu	Glu	Ala	Arg	Val	Ala	Arg	Leu	Ala	Ala	Asp	Arg
1370						1375					1380			
Asp	Glu	Ala	Arg	Gln	Gln	Leu	Ala	Ala	Asn	Ala	Glu	Glu	Leu	Gln
1385						1390					1395			
Gln	Arg	Leu	Asp	Thr	Ala	Thr	Gln	Gln	Arg	Ala	Glu	Leu	Glu	Ala
1400						1405					1410			
Gln	Val	Ala	Arg	Leu	Ala	Ala	Asn	Ala	Glu	Glu	Leu	Gln	Gln	Arg
1415						1420					1425			
Leu	Asp	Thr	Ala	Thr	Gln	Gln	Arg	Ala	Glu	Leu	Glu	Ala	Arg	Val
1430						1435					1440			
Ala	Arg	Leu	Ala	Ala	Asp	Arg	Asp	Glu	Ala	Arg	Gln	Gln	Leu	Ala
1445						1450					1455			
Ala	Asn	Ala	Glu	Glu	Leu	Gln	Gln	Arg	Leu	Asp	Thr	Ala	Thr	Gln
1460						1465					1470			
Gln	Arg	Ala	Glu	Leu	Glu	Ala	Gln	Val	Ala	Arg	Leu	Ala	Ala	Asp
1475						1480					1485			
Arg	Asp	Glu	Ala	Arg	Gln	Gln	Leu	Ala	Ala	Asn	Ala	Glu	Glu	Leu
1490						1495					1500			
Gln	Gln	Arg	Leu	Asp	Thr	Ala	Thr	Gln	Gln	Arg	Ala	Glu	Leu	Glu
1505						1510					1515			
Ala	Arg	Val	Ala	Arg	Leu	Ala	Ala	Asp	Gly	Asp	Glu	Ala	Arg	Gln
1520						1525					1530			
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Glu Glu Leu Gln Gln Arg 1580	Leu Asp Thr Ala Thr 1585	Gln Gln Arg Ala 1590
Glu Leu Glu Ala Arg Val 1595	Ala Arg Leu Ala Ala 1600	Asp Gly Asp Glu 1605
Ala Arg Gln Gln Leu Ala 1610	Ala Asn Ala Glu Glu 1615	Leu Gln Gln Arg 1620
Leu Asp Thr Ala Thr Gln 1625	Gln Arg Ala Glu Leu 1630	Glu Ala Arg Val 1635
Ala Arg Leu Ala Ala Asp 1640	Arg Asp Glu Ala Arg 1645	Gln Gln Leu Ala 1650
Ala Asn Ala Glu Glu Leu 1655	Gln Gln Arg Leu Asp 1660	Thr Ala Thr Gln 1665
Gln Arg Ala Glu Leu Glu 1670	Ala Gln Leu Ala Arg 1675	Leu Ala Ala Asp 1680
Arg Asp Glu Ala Arg Gln 1685	Gln Leu Ala Ala Asn 1690	Ala Glu Glu Leu 1695
Gln Gln Arg Leu Asp Thr 1700	Ala Thr Gln Gln Arg 1705	Ala Glu Leu Glu 1710
Ala Gln Leu Ala Arg Leu 1715	Ala Ala Asp Gly Asp 1720	Glu Ala Arg Gln 1725
Gln Leu Ala Ala Asn Ala 1730	Glu Glu Leu Gln Gln 1735	Arg Leu Asp Thr 1740
Ala Thr Gln Gln Arg Ala 1745	Glu Leu Glu Val Glu 1750	Met Ala Val Leu 1755
Leu Arg Glu Arg Glu Glu 1760	Ala Arg Gly Glu Thr 1765	Ala Val Ala Gly 1770
Glu Gln Val Gln Leu Tyr 1775	Arg Glu Thr Val Glu 1780	Glu Glu Glu Cys 1785
Leu Lys Glu Glu Arg Trp 1790	Cys Leu Glu Ser Arg 1795	Val Ala Gln Leu 1800
Arg Glu Ala Ser Ala Ala 1805	Ala Lys Gln Gln Arg 1810	Gln Glu Val Ala 1815
Ala Lys Ala Asn Glu Val 1820	Gln Glu Arg Leu Asp 1825	Ser Met Ala Arg 1830
Arg Cys Ile Ala His Glu 1835	Gly Asp Ala Pro Gln 1840	Arg Ala Asp Gly 1845



Ser Arg	Glu Ala Gln Leu Asp	Glu Arg Ala Ala Arg	Leu Arg Glu
2120	2125	2130	
Lys Glu	Gln Gln Leu Leu Arg	Val Ala Arg Glu Leu	Gln Thr Lys
2135	2140	2145	
Ser Arg	Ala Leu Gln Val Leu	Tyr Ala Arg Ala Leu	Asn Arg Pro
2150	2155	2160	
Gln Val	Thr Ser Leu Leu Leu	Thr Ala Asp Gly Asp	Asp Thr Ser
2165	2170	2175	
Tyr Pro	Asp Thr Pro Gln Gln	Gln Gln Gln Gly Thr	Arg Thr Pro
2180	2185	2190	
Leu Arg	Glu Pro Val Tyr Ser	Leu Asp Ser Glu Val	Ala His Tyr
2195	2200	2205	
Gly Arg	Thr Ala Gly Ala Ala	Val Ser Ser Gly Leu	Ala Ser Pro
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Leu Pro	Arg Glu Pro Pro Arg	Ala Arg Met Val His	Arg Ala Val
2225	2230	2235	
Glu Ala	Thr Gly Thr Glu Glu	Asp Thr Gln Val Arg	Leu Thr Ala
2240	2245	2250	
Ala Thr	Glu Ala Tyr Arg Asp	Val Leu Tyr Glu His	Ile Leu Glu
2255	2260	2265	
Ser Asn	Gly Leu Gln Gly Val	Asp Val Leu Ala Gln	Tyr Leu Pro
2270	2275	2280	
His His	Thr Ser Gly Gly Gly	Leu Lys Thr Pro Arg	Leu Pro Gly
2285	2290	2295	
Ser Gly	Ile Ile Ser Lys Thr	Arg Ala Met Leu Arg	Ala Leu Glu
2300	2305	2310	
Glu Arg	Leu Gly Ala Ser Arg	Gly Val Gly Arg Gly	Val Asp Pro
2315	2320	2325	
Ala Val	Gln Glu Arg Ser Leu	Glu Ala Phe Arg Arg	Leu Glu Ala
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Ala Leu	Ser Ala Leu Cys Gly	Gly Ser His Ala	
2345	2350		

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35 40 45  
Cys Ser Lys Cys Ala Ala Thr Lys Thr Val Ile Pro Arg Tyr Tyr Ser  
50 55 60  
Asn Glu Thr Val Pro Val Cys Gln Arg Cys Tyr Gln Val Val Glu Arg  
65 70 75 80  
Tyr Lys Glu Arg Gly Ser Val Thr Pro Gly Tyr Val Val His Ser Thr  
85 90 95  
Thr Ile Ser Ala Thr Pro Ala Arg Ser Ser Pro Val Pro Pro Leu His  
100 105 110  
Thr Thr Pro Ala Leu Arg Pro His Ala Pro Ser Pro Gln Pro Ala Ser  
115 120 125  
Val Val Ser Thr Ala Thr Leu Val His Pro Val Glu Glu Asp Ala Val  
130 135 140  
Ser Thr Lys Pro Ser Val Ser Glu Ala Asp Leu His Ala Leu Arg Ser  
145 150 155 160  
Ile Ile Glu Thr Leu Gln Gln Ala Leu Asn Asp Glu Gln His Asn Ala  
165 170 175  
Ala Leu Ala Ala Thr Ser Ala Ala Glu Gln Leu Arg Thr Ala Lys Glu  
180 185 190  
Glu Asn Thr Ala Leu Lys Ser Thr Ala His Leu Leu Gln Gln Arg Leu  
195 200 205  
Asp Thr Ala Thr Gln Gln Arg Ala Glu Leu Glu Ala Gln Val Ala Arg  
210 215 220  
Leu Ala Ala Asp Arg Asp Glu Ala Arg Gln Gln Leu Ala Ala Asn Ala  
225 230 235 240



Glu Glu Leu Gln Gln Arg Leu Asp Thr Ala Thr Gln Gln Arg Ala Glu  
 245 250 255  
 Leu Glu Ala Arg Val Ala Arg Leu Ala Ala Asp Arg Asp Glu Ala Arg  
 260 265 270  
 Gln Gln Leu Ala Ala Asn Ala Glu Glu Leu Gln Gln Arg Leu Asp Thr  
 275 280 285  
 Ala Thr Gln Gln Arg Ala Glu Leu Glu Ala Gln Val Ala Arg Leu Ala  
 290 295 300  
 Ala Asn Ala Glu Glu Leu Gln Gln Arg Leu Asp Thr Ala Thr Gln Gln  
 305 310 315 320  
 Arg Ala Glu Leu Glu Ala Gln Leu Ala Arg Leu Ala Ala Asp Arg Asp  
 325 330 335  
 Glu Ala Arg Gln Gln Leu Ala Ala Asn Ala Glu Glu Leu Gln Gln Arg  
 340 345 350  
 Leu Asp Thr Ala Thr Gln Gln Arg Ala Glu Leu Glu Ala Gln Val Ala  
 355 360 365  
 Arg Leu Ala Ala Asn Ala Glu Glu Leu Gln Gln Arg Leu Asp Thr Ala  
 370 375 380  
 Thr Gln Gln Arg Ala Glu Leu Glu Ala Arg Val Ala Arg Leu Ala Ala  
 385 390 395 400  
 Asp Arg Asp Glu Ala Arg Gln Gln Leu Ala Ala Asn Ala Glu Glu Leu  
 405 410 415  
 Gln Gln Arg Leu Asp Thr Ala Thr Gln Gln Arg Ala Glu Leu Glu Ala  
 420 425 430  
 Gln Val Ala Arg Leu Ala Ala Asn Arg Asp Glu Ala Arg Gln Gln Leu  
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 Ala Ala Asn Ala Glu Glu Leu Gln Gln Arg Leu Asp Thr Ala Thr Gln  
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 Gln Arg Ala Glu Leu Glu Ala Gln Val Ala Arg Leu Ala Ala Asp Arg  
 465 470 475 480  
 Asp Glu Ala Arg Gln Gln Leu Ala Ala Asn Ala Glu Glu Leu Gln Gln  
 485 490 495  
 Arg Leu Asp Thr Ala Thr Gln Gln Arg Ala Glu Leu Glu Ala Arg Val  
 500 505 510  
 Ala Arg Leu Ala Ala Asp Arg Asp Glu Ala Arg Gln Gln Leu Ala Ala  
 515 520 525  
 Asn Ala Glu Glu Leu Gln Gln Arg Leu Asp Thr Ala Thr Gln Gln Arg

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Ala Glu Leu Glu Ala Arg Val Ala Arg Leu Ala Ala Asn Ala Glu Glu 545 550 555 560		
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Ala Gln Val Ala Arg Leu Ala Ala Asn Ala Glu Glu Leu Gln Gln Arg 580 585 590		
Leu Asp Thr Ala Thr Gln Gln Arg Ala Glu Leu Glu Ala Arg Val Ala 595 600 605		
Arg Leu Ala Ala Asp Arg Asp Glu Ala Arg Gln Gln Leu Ala Ala Asn 610 615 620		
Ala Glu Glu Leu Gln Gln Arg Leu Asp Thr Ala Thr Gln Gln Arg Ala 625 630 635 640		
Glu Leu Glu Ala Gln Leu Ala Arg Leu Ala Ala Asp Gly Asp Glu Ala 645 650 655		
Arg Gln Gln Leu Ala Ala Asn Ala Glu Glu Leu Gln Gln Arg Leu Asp 660 665 670		
Thr Ala Thr Gln Gln Arg Ala Glu Leu Glu Ala Arg Val Ala Arg Leu 675 680 685		
Ala Ala Asp Arg Asp Glu Ala Arg Gln Gln Leu Ala Ala Asn Ala Glu 690 695 700		
Glu Leu Gln Gln Arg Leu Asp Thr Ala Thr Gln Gln Arg Ala Glu Leu 705 710 715 720		
Glu Ala Gln Leu Ala Arg Leu Ala Ala Asp Arg Asp Glu Ala Arg Gln 725 730 735		
Gln Leu Ala Ala Asn Ala Glu Glu Leu Gln Gln Arg Leu Asp Thr Ala 740 745 750		
Thr Gln Gln Arg Ala Glu Leu Glu Ala Arg Val Ala Arg Leu Ala Ala 755 760 765		
Asp Gly Asp Glu Ala Arg Gln Gln Leu Ala Ala Asn Ala Glu Glu Leu 770 775 780		
Gln Gln Arg Leu Asp Thr Ala Thr Gln Gln Arg Ala Glu Leu Glu Ala 785 790 795 800		
Arg Val Ala Arg Leu Ala Ala Asp Arg Asp Glu Ala Arg Gln Gln Leu 805 810 815		
Ala Ala Asn Ala Glu Glu Leu Gln Gln Arg Leu Asp Thr Ala Thr Gln 820 825 830		

Gln Arg Ala Glu Leu Glu Ala Gln Leu Ala Arg Leu Ala Ala Asp Gly  
 835 840 845  
 Asp Glu Ala Arg Gln Gln Leu Ala Ala Asn Ala Glu Glu Leu Gln Gln  
 850 855 860  
 Arg Leu Asp Thr Ala Thr Gln Gln Arg Ala Glu Leu Glu Ala Arg Val  
 865 870 875 880  
 Ala Arg Leu Ala Ala Asp Arg Asp Glu Ala Arg Gln Gln Leu Ala Ala  
 885 890 895  
 Asn Ala Glu Glu Leu Gln Gln Arg Leu Asp Thr Ala Thr Gln Gln Arg  
 900 905 910  
 Ala Glu Leu Glu Ala Gln Leu Ala Arg Leu Ala Ala Asp Arg Asp Glu  
 915 920 925  
 Ala Arg Gln Gln Leu Ala Ala Asn Ala Glu Glu Leu Gln Gln Arg Leu  
 930 935 940  
 Asp Thr Ala Thr Gln Gln Arg Ala Glu Leu Glu Ala Gln Val Ala Arg  
 945 950 955 960  
 Leu Ala Ala Asp Gly Asp Glu Ala Arg Gln Gln Leu Ala Ala Asn Ala  
 965 970 975  
 Glu Glu Leu Gln Gln Arg Leu Asp Thr Ala Thr Gln Gln Arg Ala Glu  
 980 985 990  
 Leu Glu Ala Gln Leu Ala Arg Leu Ala Ala Asp Arg Asp Glu Ala Arg  
 995 1000 1005  
 Gln Gln Leu Ala Ala Asn Ala Glu Glu Leu Gln Gln Arg Leu Asp  
 1010 1015 1020  
 Thr Ala Thr Gln Gln Arg Ala Glu Leu Glu Ala Gln Val Ala Arg  
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 Leu Ala Ala Asn Ala Glu Glu Leu Gln Gln Arg Leu Asp Thr Ala  
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 Thr Gln Gln Arg Ala Glu Leu Glu Ala Arg Val Ala Arg Leu Ala  
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 Ala Asp Arg Asp Glu Ala Arg Gln Gln Leu Ala Ala Asn Ala Glu  
 1070 1075 1080  
 Glu Leu Gln Gln Arg Leu Asp Thr Ala Thr Gln Gln Arg Ala Glu  
 1085 1090 1095  
 Leu Glu Ala Arg Val Ala Arg Leu Ala Ala Asn Ala Glu Glu Leu  
 1100 1105 1110

Gln Gln Arg Leu Asp Thr Ala Thr Gln Gln Arg Ala Glu Leu Glu	1115	1120	1125
Ala Gln Val Ala Arg Leu Ala Ala Asn Ala Glu Glu Leu Gln Gln	1130	1135	1140
Arg Leu Asp Thr Ala Thr Gln Gln Arg Ala Glu Leu Glu Ala Arg	1145	1150	1155
Val Ala Arg Leu Ala Ala Asp Arg Asp Glu Ala Arg Gln Gln Leu	1160	1165	1170
Ala Ala Asn Ala Glu Glu Leu Gln Gln Arg Leu Asp Thr Ala Thr	1175	1180	1185
Gln Gln Arg Ala Glu Leu Glu Ala Gln Val Ala Arg Leu Ala Ala	1190	1195	1200
Asn Ala Glu Glu Leu Gln Gln Arg Leu Asp Thr Ala Thr Gln Gln	1205	1210	1215
Arg Ala Glu Leu Glu Ala Gln Leu Ala Arg Leu Ala Ala Asp Arg	1220	1225	1230
Asp Glu Ala Arg Gln Gln Leu Ala Ala Asn Ala Glu Glu Leu Gln	1235	1240	1245
Gln Arg Leu Asp Thr Ala Thr Gln Gln Arg Ala Glu Leu Glu Ala	1250	1255	1260
Gln Val Ala Arg Leu Ala Ala Asn Ala Glu Glu Leu Gln Gln Arg	1265	1270	1275
Leu Asp Thr Ala Thr Gln Gln Arg Ala Glu Leu Glu Ala Arg Val	1280	1285	1290
Ala Arg Leu Ala Ala Asp Arg Asp Glu Ala Arg Gln Gln Leu Ala	1295	1300	1305
Ala Asn Ala Glu Glu Leu Gln Gln Arg Leu Asp Thr Ala Thr Gln	1310	1315	1320
Gln Arg Ala Glu Leu Glu Ala Arg Val Ala Arg Leu Ala Ala Asp	1325	1330	1335
Gly Asp Glu Ala Arg Gln Gln Leu Ala Ala Asn Ala Glu Glu Leu	1340	1345	1350
Gln Gln Arg Leu Asp Thr Ala Thr Gln Gln Arg Ala Glu Leu Glu	1355	1360	1365
Ala Gln Val Ala Arg Leu Ala Ala Asn Ala Glu Glu Leu Gln Gln	1370	1375	1380
Arg Leu Asp Thr Ala Thr Gln Gln Arg Ala Glu Leu Glu Ala Arg			

1385 1390 1395  
Val Ala Arg Leu Ala Ala Asp Arg Asp Glu Ala Arg Gln Gln Leu  
1400 1405 1410  
Ala Ala Asn Ala Glu Glu Leu Gln Gln Arg Leu Asp Thr Ala Thr  
1415 1420 1425  
Gln Gln Arg Ala Glu Leu Glu Ala Gln Val Ala Arg Leu Ala Ala  
1430 1435 1440  
Asp Arg Asp Glu Ala Arg Gln Gln Leu Ala Ala Asn Ala Glu Glu  
1445 1450 1455  
Leu Gln Gln Arg Leu Asp Thr Ala Thr Gln Gln Arg Ala Glu Leu  
1460 1465 1470  
Glu Ala Arg Val Ala Arg Leu Ala Ala Asp Gly Asp Glu Ala Arg  
1475 1480 1485  
Gln Gln Leu Ala Ala Asn Ala Glu Glu Leu Gln Gln Arg Leu Asp  
1490 1495 1500  
Thr Ala Thr Gln Gln Arg Ala Glu Leu Glu Ala Gln Leu Ala Arg  
1505 1510 1515  
Leu Ala Ala Asp Arg Asp Glu Ala Arg Gln Gln Leu Ala Ala Asn  
1520 1525 1530  
Ala Glu Glu Leu Gln Gln Arg Leu Asp Thr Ala Thr Gln Gln Arg  
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Arg Leu Asp Thr Ala Thr Gln Gln Arg Ala Glu Leu Glu Ala Arg  
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Val Ala Arg Leu Ala Ala Asp Arg Asp Glu Ala Arg Gln Gln Leu  
1595 1600 1605  
Ala Ala Asn Ala Glu Glu Leu Gln Gln Arg Leu Asp Thr Ala Thr  
1610 1615 1620  
Gln Gln Arg Ala Glu Leu Glu Ala Gln Leu Ala Arg Leu Ala Ala  
1625 1630 1635  
Asp Arg Asp Glu Ala Arg Gln Gln Leu Ala Ala Asn Ala Glu Glu  
1640 1645 1650  
Leu Gln Gln Arg Leu Asp Thr Ala Thr Gln Gln Arg Ala Glu Leu  
1655 1660 1665

Glu Ala	Gln Leu	Ala Arg	Leu	Ala Ala	Asp Gly	Asp	Glu Ala	Arg	
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Gln Gln	Leu Ala	Ala Asn	Ala	Glu Glu	Leu Gln	Gln	Arg Leu	Asp	
1685			1690			1695			
Thr Ala	Thr Gln	Gln Arg	Ala	Glu Leu	Glu Val	Glu	Met Ala	Val	
1700			1705			1710			
Leu Leu	Arg Glu	Arg Glu	Glu	Ala Arg	Gly Glu	Thr	Ala Val	Ala	
1715			1720			1725			
Gly Glu	Gln Val	Gln Leu	Tyr	Arg Glu	Thr Val	Glu	Glu Glu	Glu	
1730			1735			1740			
Cys Leu	Lys Glu	Glu Arg	Trp	Cys Leu	Glu Ser	Arg	Val Ala	Gln	
1745			1750			1755			
Leu Arg	Glu Ala	Ser Ala	Ala	Ala Lys	Gln Gln	Arg	Gln Glu	Val	
1760			1765			1770			
Ala Ala	Lys Ala	Asn Glu	Val	Gln Glu	Arg Leu	Asp	Ser Met	Ala	
1775			1780			1785			
Arg Arg	Cys Ile	Ala His	Glu	Gly Asp	Ala Pro	Gln	Arg Ala	Asp	
1790			1795			1800			
Gly Arg	Asp Asp	Ala Leu	Arg	Gln Leu	Ala Asn	Leu	Arg Glu	Glu	
1805			1810			1815			
Val Lys	Leu Ser	Glu Lys	Gln	Lys Ala	Met Glu	Arg	Val Ile	Pro	
1820			1825			1830			
Gly Val	Arg Glu	Arg Gln	Met	Arg Leu	Glu Ala	Ala	Glu Glu	Gln	
1835			1840			1845			
Arg Ala	Asp Leu	Glu Ala	Arg	Leu Val	Asp Glu	Ala	Gly Asp	Leu	
1850			1855			1860			
Arg Ser	Arg Pro	Ala Ala	Ser	Thr Asn	Glu Val	Asn	Leu Tyr	Arg	
1865			1870			1875			
Asp Leu	Ala Leu	Gln Glu	His	Glu Ala	Ala Gln	Asn	Arg Cys	Thr	
1880			1885			1890			
Thr Leu	Glu Ala	Gln Val	Ala	Ser Leu	Thr Ser	Asp	Arg Asp	Asn	
1895			1900			1905			
Gly Arg	Gln Gln	Glu Ser	Ala	Asp Leu	Ser Glu	Ala	Gln Arg	His	
1910			1915			1920			
Leu Asp	Asn Val	Gln Glu	Arg	Asp Met	Ala His	His	Arg Cys	Ala	
1925			1930			1935			

Ala	Leu	Glu	Glu	Gln	Asn	Ala	Ala	Met	Ala	Ser	Glu	Leu	Gln	Ala
1940						1945					1950			
Val	Lys	Ala	Lys	Leu	Arg	Gln	Ala	Ser	Val	Lys	Ala	Ser	Ser	Leu
1955						1960					1965			
Met	Thr	Arg	Leu	Ser	Ala	Ser	Ser	Ser	Gly	Ala	Gly	Gly	Val	Ser
1970						1975					1980			
Ala	Arg	Val	Arg	Val	Gly	Gly	Ser	Ser	Ala	Val	Pro	Gln	Ala	Ala
1985						1990					1995			
Pro	His	Arg	Asp	Ala	Glu	Leu	Ile	Ala	Glu	Val	Gly	Glu	Arg	Leu
2000						2005					2010			
Arg	Glu	Arg	Gly	Glu	Ala	Met	Arg	Leu	Leu	Ala	Glu	Gly	Val	Glu
2015						2020					2025			
Leu	Arg	Glu	Arg	Ala	Arg	Pro	Leu	Glu	Arg	Val	Leu	Ala	Glu	Lys
2030						2035					2040			
Leu	Ile	Gly	Asp	Arg	Arg	Thr	Ser	Asp	Ala	Glu	Glu	Val	Ala	Thr
2045						2050					2055			
Glu	Pro	Thr	Gln	Val	Arg	Arg	Asn	Ala	Ala	His	Ser	Arg	His	Leu
2060						2065					2070			
Asp	Ser	Arg	Glu	Ala	Gln	Leu	Asp	Glu	Arg	Ala	Ala	Arg	Leu	Arg
2075						2080					2085			
Glu	Lys	Glu	Gln	Gln	Leu	Leu	Arg	Val	Ala	Arg	Glu	Leu	Gln	Thr
2090						2095					2100			
Lys	Ser	Arg	Ala	Leu	Gln	Val	Leu	Tyr	Ala	Arg	Ala	Leu	Asn	Arg
2105						2110					2115			
Pro	Gln	Val	Thr	Ser	Leu	Leu	Leu	Thr	Ala	Asp	Gly	Asp	Asp	Thr
2120						2125					2130			
Ser	Tyr	Pro	Asp	Thr	Pro	Gln	Gln	Gln	Gln	Gln	Gly	Thr	Arg	Thr
2135						2140					2145			
Pro	Leu	Arg	Glu	Pro	Val	Tyr	Ser	Leu	Asp	Ser	Glu	Val	Ala	His
2150						2155					2160			
Tyr	Gly	Arg	Thr	Ala	Gly	Ala	Ala	Val	Ser	Ser	Gly	Leu	Ala	Ser
2165						2170					2175			
Pro	Leu	Pro	Arg	Glu	Pro	Pro	Arg	Ala	Arg	Met	Val	His	Arg	Ala
2180						2185					2190			
Val	Glu	Ala	Thr	Gly	Thr	Glu	Glu	Asp	Thr	Gln	Val	Arg	Leu	Thr
2195						2200					2205			
Ala	Ala	Thr	Glu	Ala	Tyr	Arg	Asp	Val	Leu	Tyr	Glu	His	Ile	Leu

2210	2215	2220
Glu Ser Asn Gly Leu Gln Gly Val Asp Val Leu Ala Gln Tyr Leu		
2225	2230	2235
Pro His His Thr Ser Gly Gly Gly Leu Lys Thr Pro Arg Leu Pro		
2240	2245	2250
Gly Ser Gly Ile Ile Ser Lys Thr Arg Ala Met Leu Arg Ala Leu		
2255	2260	2265
Glu Glu Arg Leu Gly Ala Ser Arg Gly Val Gly Arg Gly Val Asp		
2270	2275	2280
Pro Ala Val Gln Glu Arg Ser Leu Glu Ala Phe Arg Arg Leu Glu		
2285	2290	2295
Ala Ala Leu Ser Ala Leu Cys Gly Gly Ser His Ala		
2300	2305	2310

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Asp Gln Glu Leu Ser Ile Leu Lys Leu Ile Leu Asp Leu Arg Ser Leu			
20	25	30	
Gly Asp Val Glu Gly Ser Lys Lys Val Arg Arg Arg Val Arg Glu Ala			
35	40	45	
Leu Leu Lys Ser Ser Asp Asp Ser Glu Ala Met Ser Lys Val Asp Asp			
50	55	60	
Ile Ile Arg Arg Gly Lys Arg Thr Gln Ser Lys Leu Asp Gly Ser Tyr			
65	70	75	80
Asp Glu Arg Gln Arg Leu Lys Arg Lys Arg Arg Glu Glu Asp Leu Ala			
85	90	95	



Ala Ala Ser Arg Leu Val Asp Val Glu Ala Gly Ser Gly Glu Asp Ser  
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Glu Gly Ser Ala Ser Thr Glu Glu Asp Gly Thr Glu Asp  
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Val Gly Asp Phe Arg Arg Val Ile Glu Glu Glu Leu Thr Pro Gly Met  
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Ile Val Pro Val Arg Ile Asn Arg Gly Gly Val Ala Met Val Val Thr  
35 40 45

Val Arg Val Glu Ala Gly Arg Ser Leu  
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Val Lys Ala Cys Asn Asp Arg Ser His Arg His Thr His Thr His Thr  
20 25 30

His Thr Asn Ser Phe Val Ser Gly Asp Val Phe His Val Trp Arg Val  
35 40 45

Arg Ser Phe His Ser Ala Pro Ser Val Phe Phe Cys Phe Ser Val Cys  
50 55 60

Thr His Leu Leu Phe Ser Pro Ser Ser Pro Tyr Ala His His Ala Arg  
65 70 75 80

Val Cys Val Arg Ala Cys Val Cys Val Cys Val Cys Val Val  
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Pro Leu Leu Lys His Tyr Ser Arg Gly Met Ala Ser Ser Gly Ser Ala  
20 25 30

Lys Asp Asp Ala Leu Phe Leu Val Arg Arg Pro Lys Tyr Leu Val Ala  
35 40 45

Gln Ala Val Asn Leu Ser Gly Ser Val Val Phe Phe His Ser Leu Arg  
50 55 60

Glu Val Asp Val Ser Val Gly Ser Ile Val Val Asn Ser Leu Ala Phe  
65 70 75 80

Val Ile Thr Val Leu Met Ser Val Leu Val Leu Arg Glu Gly Leu Leu  
85 90 95

Arg Ala Arg Thr Thr Ala Gly Cys Leu Leu Val Met Val Gly Thr Ala  
100 105 110

Leu Cys Thr Tyr Ser Ser Ser Ala Ser  
115 120

155/155